

The

CONSTRUCTOR

OFFICIAL PUBLICATION OF THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA



Volume XXXIV

MAY 1952

Number 5

● BUILDINGS

● HIGHWAYS

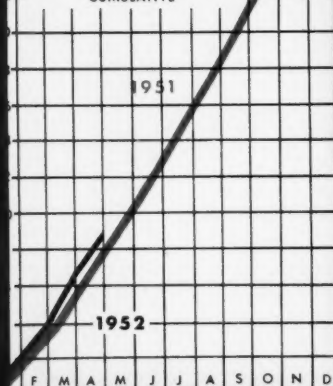
● AIRPORTS

● RAILROADS

● PUBLIC WORKS



NEW CONSTRUCTION
(Billions of Dollars)
CUMULATIVE

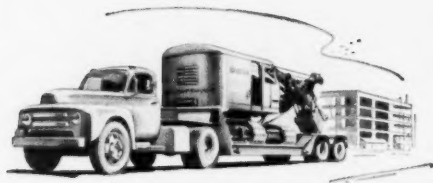


Seek Naming of Subcontractors in Bids—25

New Korean Feat by A.G.C. Affiliated Unit—31

Architects' Views on Modular Building—57

Eaton 2-Speeds



are designed and built
for simple, low cost
maintenance



Eaton 2-Speeds will take years of heavy-duty operation. Eaton's exclusive planetary gearing better distributes gear-tooth loads, and the exclusive forced-feed oiling system provides positive lubrication even at slowest vehicle speeds. Extra rugged construction eliminates the possibility of distortion or misalignment under heaviest loads. When repair is necessary, practical down-to-earth design makes the work quick, easy, and economical. Eaton 2-Speeds also reduce maintenance cost on the vehicle through lower stress and less wear on engines and power transmitting parts. Ask your dealer to explain how Eaton 2-Speeds will help *your* trucks haul more, faster, longer, at less cost.

EATON *2-Speed Truck* AXLES

Axle Division

EATON MANUFACTURING COMPANY
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Available Now— RYEX EXPANDED METAL

Ryex expanded metal is on hand at your nearby Ryerson plant in two types—standard and flattened—and in a wide range of sizes and gauges. It may be used in any authorized construction and its applications in the building and industrial fields are endless.

Use Ryex to reinforce small concrete slabs, for repair of walls, dams and paving, and for all types of Gothic and stucco work. Use it to make tool and stock room enclosures, guards and screens, shelves, gates and walkways.

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JOSEPH T. RYERSON & SON, INC. STEEL SERVICE PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA
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THE CONSTRUCTOR, MAY 1952



WIRE ROPE

Almost every type of wire rope except galvanized can be shipped on short notice, and Ryerson carries only highest quality rope from leading producers.



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Both light and heavy weight lally columns can be supplied quickly to specification. Steel caps, bases and brackets fabricated to meet all structural requirements. Sizes from 3" to 12 1/4" in diameter.

MACHINERY & TOOLS FOR PROMPT SHIPMENT

Have you thought of Ryerson as a source for contractor's machinery and tools? We can deliver the following promptly: portable electric tools, hand operated bar shears and benders, chain and electric hoists, many others.



HI-BOND
RE-BARS

First of the new high-strength bars, the Hi-Bond reinforcing bar gives stronger construction and increased resistance to the formation of tensile cracks. Hi-Bond's greater bonding grip is test-proven. Every bar meets or exceeds ASTM spec. A 305.

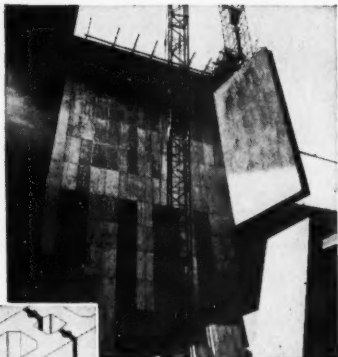
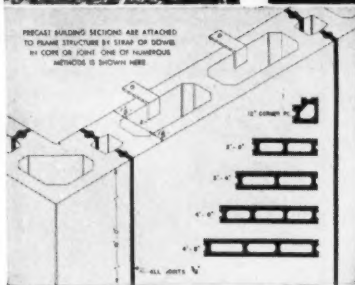


TOMORROW'S WALL

Today!

48 Sq. Ft. of Finished Wall Erected in 8 Minutes

Wall panels are quickly erected by crane. Scaffolding and hoist in photo above are for other purposes.



JERSEY CENTRAL POWER & LIGHT CO.
Power House Addition
South Amboy, N.J.

Engineers and General
Contractor:
BURNS & ROE, INC., New York
Wall Panels Manufactured
and Installed by:
PRECAST BUILDING SECTIONS, INC.
21 East 40th Street
New York 16, N.Y.

● Consider the advantages of precast wall panels: A complete wall system, quickly erected, in story-high sections . . . insulating, fire-safe . . . joints equal in strength and watertightness to the panels themselves . . . a wall requiring no finish.

Precast Building Sections were used for 8,000 sq. ft. of wall, for this 140-ft.-high Power-House addition . . . an all-purpose, one operation wall system . . . each 48-sq.-ft. panel lifted into place in 8 minutes . . . a finished wall as attractive as high quality cut stone.

Panels are produced in a range of sizes, for flexibility in architectural treatment and economy in construction. Lightweight aggregate, hollow-core design, and strong, dense concrete assure high insulating value and utmost fire-safety. Walls erected in 1912 are in first-class condition today.

Units are mass-produced by assembly-line methods, under rigid quality control. Air-entrained 'INCOR'® 24-HOUR CEMENT concrete is used: (1) extra plasticity expedites filling of 1½" space in heavy steel forms; (2) dependable high early strength permits stripping after initial 40 minutes' high-temperature curing . . . 6 to 8 daily uses of each form.

Tomorrow's wall today . . . shop-produced, flexible, ready-to-assemble . . . uniform, attractive appearance . . . result of engineering imagination and production know-how, with an assist from America's FIRST high-early-strength portland cement. *Reg. U. S. Pat. Off.



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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,600,000 SACKS ANNUAL CAPACITY

The CONSTRUCTOR

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BUILDINGS • HIGHWAYS • AIRPORTS



RAILROADS • PUBLIC WORKS

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COVER

The man-made spider web of steel on this month's cover is the framework of the roof for a new Ford Motor Co. building. The structure will be part of the firm's new \$50 million Research and Engineering Center in Dearborn, Michigan.

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C.I.T. CORPORATION
Industrial Financing

ONE PARK AVENUE, NEW YORK 10, N. Y.

S. D. MADDOCK
PRESIDENT

May, 1952

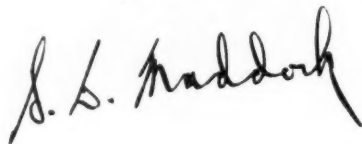
Dear Mr. Contractor:

Will you be ready to go to work when your next bid is accepted? The deciding factor may very well be the availability of more machinery and working capital.

The purchase of profit-making equipment, or advance of working funds against equipment that you now own, can be arranged through C.I.T. Corporation financing. Your income from jobs will dictate repayment plans.

Write us and we will arrange a meeting to plan a financing program for you.

Yours truly,



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ATLANTA

1007 Preston Ave.
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416 W. 8th St.
LOS ANGELES

660 Market St.
SAN FRANCISCO

Structural steel for commercial projects in the third quarter should be more than double the amount available in the second quarter, according to the Defense Production Administration. Allocations for road, school and hospital construction were also substantially increased (page 22). Steel fabricators, in meeting with NPA, reported supplies rapidly improving and backlog of orders decreasing.

Steel embargo, issued by National Production Authority, prohibits exports and shipments to manufacturers of consumer durable goods, and may be extended to other users, including construction, if strike is prolonged (page 23). Strike will delay NPA plans to make additional amounts of steel available to the construction industry.

Copper strikes in the U. S. and Chile threaten to make sharp curtailments in allocations of copper. NPA told brass mill industry that if the situation continues long, supply may meet only direct military needs.

Price decontrol was recommended by Construction Industry Advisory Committee meeting in Washington April 25. Construction men asserted that industry was offering services below current ceilings.

Approval of 1,599 non-defense construction projects throughout the nation was announced by NPA which stated special attention had been given to areas suffering from lack of industrial expansion work. (Page 21)

Taft-Hartley Act amendment, recommended by Senate Labor Committee, would permit building trades unions and contractors to make collective bargaining agreements before workers had been hired at the site and would cut from 30 to seven days the waiting time before a worker must join the union. (Page 23)

Self-authorizations of carbon steel for road and school projects were increased last month to take effect after July 1. School builders will be able to self-authorize up to 50 tons; road builders up to 25 tons. (Page 22)

Naming of subcontractors in bids for federal construction projects is the aim of S. 2907, being considered by the Senate Judiciary Committee. Specialty contractors, appearing before the committee, claimed the legislation would cure a host of evils. Government representatives who testified at same time did not agree. (Page 25)

For military construction, Defense Department has asked Congress for authority to spend \$3 billion to expand Army, Navy and Air Force bases at home and abroad. House military leaders announced in advance their plans to cut the requested funds in half.

Health and welfare fund rules, laid down in Reg. 2, issued by the Construction Industry Stabilization Commission last month, give details on how policy will be administered. CISC also issued a policy resolution covering 1952 wage increases not exceeding 15¢ per hour over the already approved 10¢ increase. (Page 39)

WSB Enforcement Commission dodged issue of whether agency can legally impose sanctions against lump-sum contract prices in cases involving violation of wage regulations. In Hedin case appeal from regional body's decision, the commission halved penalties imposed, permitting only a tax deduction disallowance. (Page 40)

An A.G.C. Affiliated unit in Korea, the 439th Engineer Construction Battalion, successfully launched across the Han River the world's longest continuous steel girder, 36" deep, 835' long and weighing 375 tons. The unit surpassed its record-making feat of last year when it launched the then world's longest continuous girder, 270 feet in length and weighing 135 tons over high railway towers at Kilra Chon, Korea. (Page 31)

Errors in bids on Navy construction contracts are increasing, causing the Bureau of Yards and Docks serious concern. Officials, who say they expect a few inexperienced low bidders to ask release from contracts, complain some requests have been from well-established contractors. The Bureau

urges more caution in bid preparation. (Page 71)

Construction equipment is currently in good supply and should get better, industry officials say. There is remote chance of surplus this year, barring a major setback in steel production, if contractors substantially cancel orders or the government disposes of its stockpiles. (Page 85)

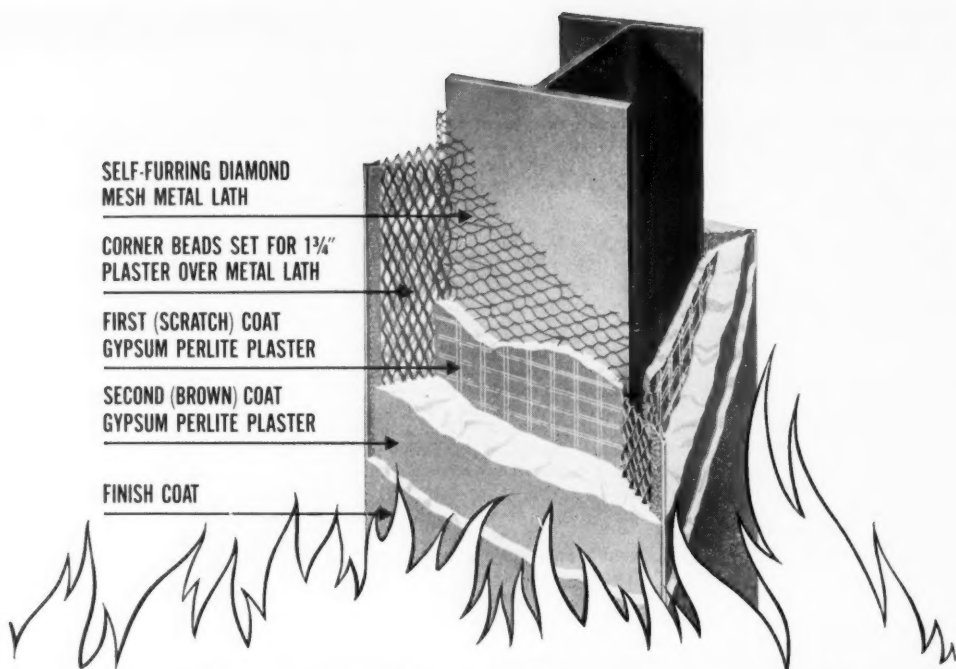
Modular coordination is defended by American Institute of Architects spokesman and practicing architects who disclaim difficulties in the system. This is considered the architects' answer to general contractors who in earlier issues of *THE CONSTRUCTOR* reported "headaches" and added expense when they mixed the designs on the job. (Page 57)

Construction contract awards rose sharply in March, with substantial increases in all major categories, the Federal Reserve Board reports. Non-farm housing units started totaled 98,000 as compared with 77,000 in February and 94,000 a year ago. Dollar volume of work through April topped same period last year.

Recent flood disaster could have been completely averted had scheduled dam construction in stricken areas been completed, according to General Pick, Corps of Engineers chief. He blames failure to meet schedules on lack of appropriations. (Page 72)

Transfer of civil functions from Corps of Engineers to Interior Department was under consideration by White House early in April, but proposed reorganization plan was reported dropped at end of month. (Page 23)

Renegotiation Board regulations include A.G.C. recommendation that contractors have the option of being renegotiated on completed contract or over-all basis, and where A.G.C. asked that all overseas contracts be exempt, the regulations exempt "certain" foreign contracts. Board is also considering association's request that partners in joint venture be allowed to offset losses from other renegotiable business against joint venture profits. (Page 29)



4-hour fire-resistive rating for steel columns now possible with Truscon Diamond Mesh Lath!

Here's a new, quick and economical method of protecting steel columns with Truscon Self-Furring Diamond Mesh Lath and plaster. *Official tests at the Underwriters' Laboratories in Chicago prove that this new construction method will keep steel columns from twisting and buckling for more than 4 hours in a flaming building!*

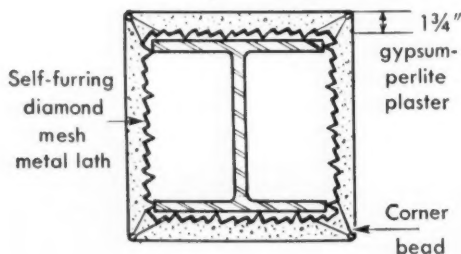
Here's how it's done. Self-Furring Truscon Diamond Mesh Lath is wrapped around the column, corner beads are attached, and gypsum perlite plaster is applied to a thickness of 1 3/4

inches. There are no forms, no backfill, no fancy furring gadgets required. The Truscon Diamond Mesh Lath imbedded in the plaster gives a two-way reinforcement against temperature and structural stresses.

This new fireproofing is only one-seventh of the weight of standard protections, such as encasing the column in concrete or brick. When this extra "dead load" is eliminated, the steel columns can be smaller—conserving defense-needed steel as well as reducing the cost of the structure.

Column protection for 1, 2 or 3-hour resistive ratings can also be accomplished with metal lath and plaster.

Write today for additional details and specifications of steel column fireproofing with TRUSCON Diamond Mesh Lath and plaster.



TRUSCON

TRUSCON® STEEL COMPANY
1100 ALBERT STREET • YOUNGSTOWN 1, OHIO
Subsidiary of Republic Steel Corporation

a name you can build on

A Series of Graphs Outlining the Construction Trend

Compiled by The Associated General Contractors of America

TREND OF CONSTRUCTION COSTS

The average of construction costs in the principal construction centers of the United States for April stands at Index Number 379, according to the A.G.C. Index. The cost figure for April 1951 was 376. The 1913 average equals 100.

Number 289. The average a year ago stood at 293. The 1913 average, again, equals 100.

CONTRACT AWARDS IN 37 STATES

The volume of contracts awarded during March (Index Number 265, based on 1936-1938) is an increase of 88 points from February, and an increase of 10 points from March 1951.

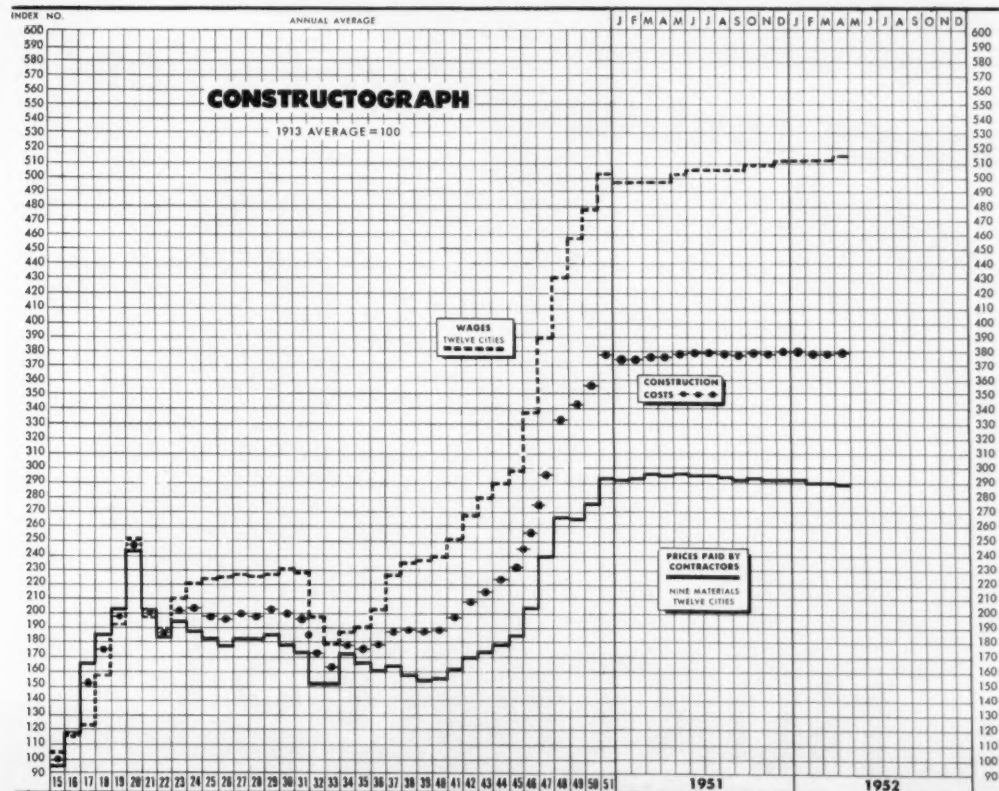
WAGE AND MATERIAL PRICE TRENDS

The average of wages in the principal construction centers of the United States stands at 515 for April. One year ago the average stood at 497. The average prices paid by contractors for basic construction materials for April stand at Index

REVENUE FREIGHT LOADINGS

Revenue freight loaded during the first 16 weeks of 1952 totaled 11,470,966 cars. For the same period in 1951, loadings amounted to 11,824,492 cars. This represents a decrease of 3%.

● Wage, Material Price and Construction Cost Trends



BIGGER

NUMBERS



B. PERINI & SONS CO.
Framingham, Mass.

buy their **THIRTIETH**
NORTHWEST

mean continued satisfaction!

THE PURCHASE of 30 machines of one make has some real meaning for every buyer of that type of equipment. B. Perini & Sons Co. of Framingham, Mass., is taking delivery on their 29th and 30th Northwest shortly. B. Perini & Sons Co. is a successful outfit that has used many makes of shovels and cranes. It's something to consider in making plans for your future purchases. Growing numbers like this mean continued satisfaction. They indicate how well Northwest has maintained its standard of quality over the years. There is significance in the fact that B. Perini & Sons Co. have bought Northwest year after year.

Planning to be Northwest equipped has been a continued part of the Perini program. You can plan in that direction too and receive the same profitable service. Talk it over with a Northwest man. It will pay you to place an order.

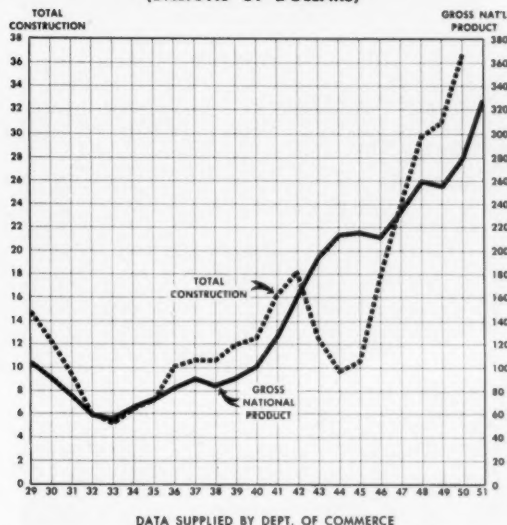
NORTHWEST ENGINEERING COMPANY
1502-8 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

NORTHWEST

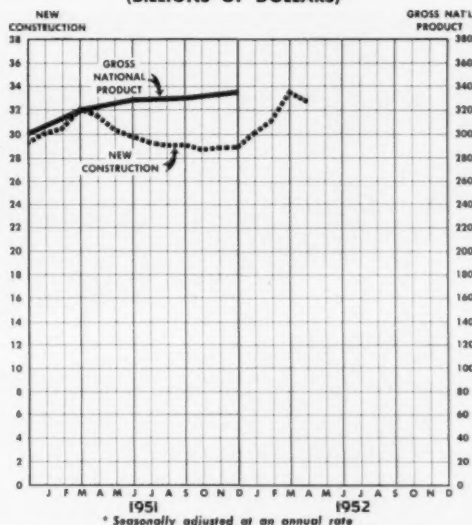
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

*Successful Contractors
Stay Successful
With Proved Equipment*

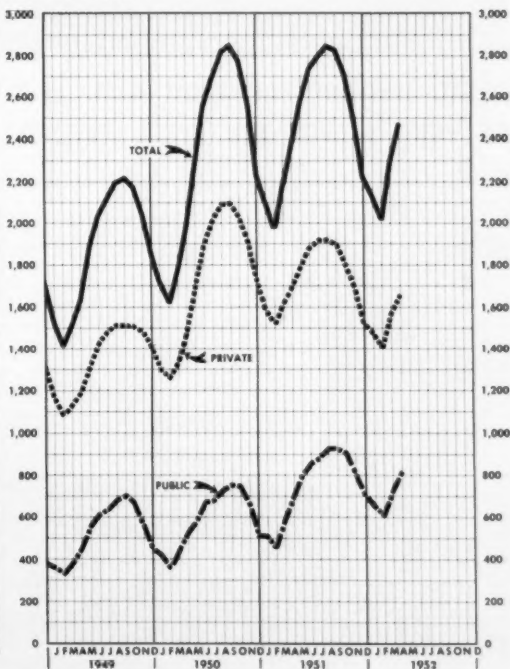
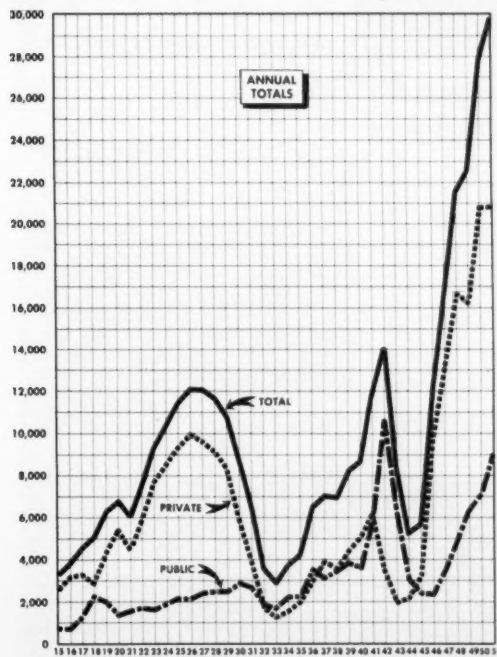
● **TOTAL Construction compared with Gross National Product**
(BILLIONS OF DOLLARS)



● **NEW Construction compared with Gross National Product***
(BILLIONS OF DOLLARS)



● **New Construction Activity (MILLIONS OF DOLLARS)**



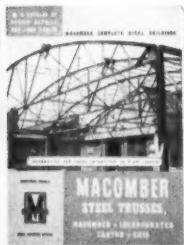
FOR THE ARCHITECT, THE BUILDERS AND THOSE WHO INVEST



ONE OF THE MACOMBER GROUP
OF MODERN FABRICATING UNITS

THESE MODERN FACILITIES WILL AMPLY QUALIFY AS YOUR SOURCE FOR STEEL BUILDING PRODUCTS

Here under many roofs is tangible evidence of what men in construction want in their steel source . . . advanced engineering practice; coordinated fabricating beamed at honest delivery dates; ample established credit among suppliers and a clean sales policy. Investigate MACOMBER from any standpoint—in person—if you can and we believe your decision will make Macomber your steel source.

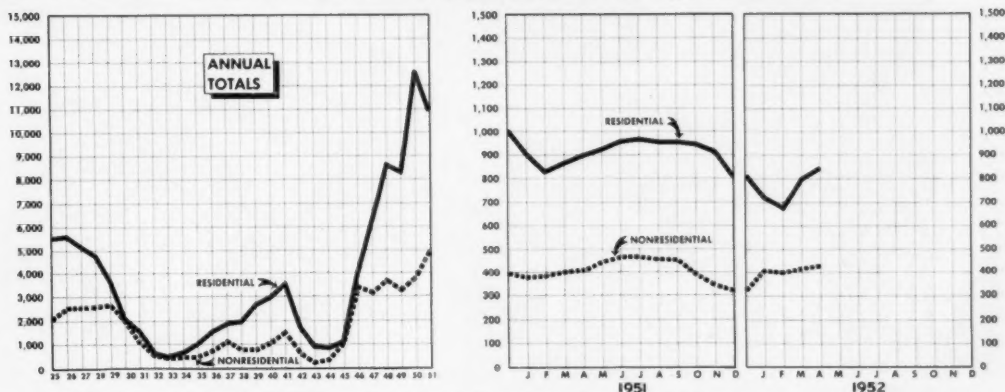


STANDARDIZED STEEL BUILDING PRODUCTS
MACOMBER • INCORPORATED
CANTON, OHIO

V BAR JOISTS • LONGSPANS • BOWSTRING TRUSSES • STEEL DECK

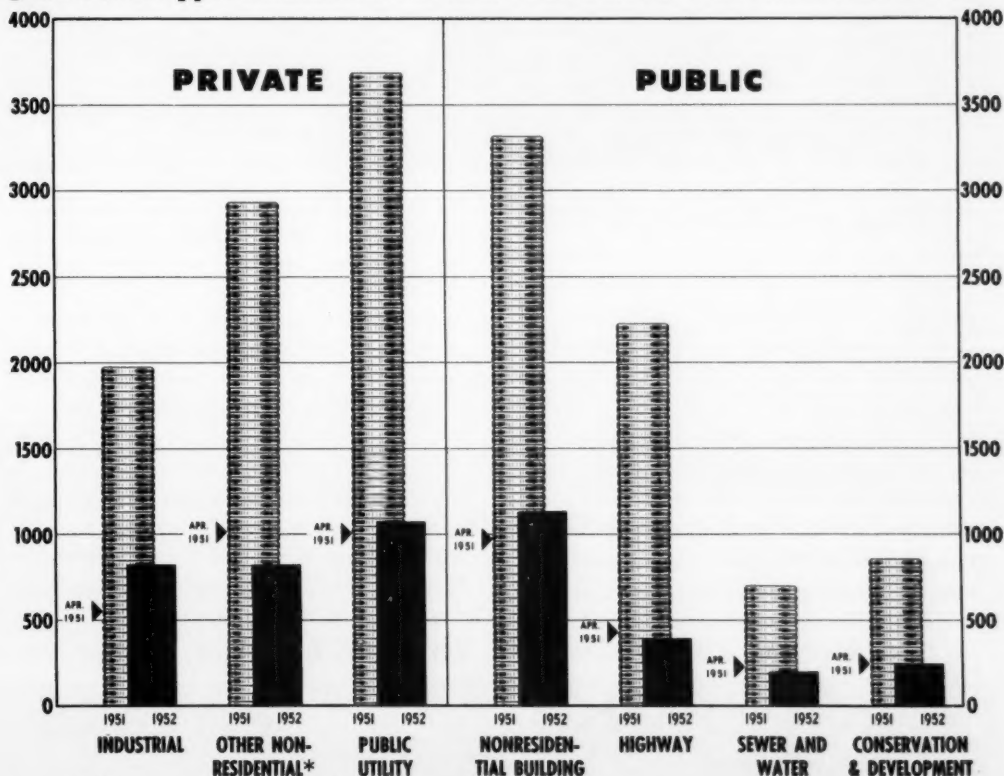
NEW CONSTRUCTION ACTIVITY

● Private Residential and Nonresidential Building* (MILLIONS OF DOLLARS)



* Residential excludes farm; Nonresidential includes industrial, commercial, institutional, and social and recreational building, but excludes public utility building.

● Selected Types: (CUMULATIVE, MILLIONS OF DOLLARS) 1951 and 1952 VOLUME THROUGH APRIL



* Includes commercial, institutional, and social and recreational building



Koehring 34-E *twinbatch* Paver

can hit a top output of 86.7 batches an hour, on 60-second mixing time. This reserve production capacity can be used to pick up lost time from normal production delays . . . assures 50 batches an hour, 8 hours a day, at no increase in batching, hauling and finishing equipment. Limited-production, single drum paver theoretically mixes up to 50 batches an hour, but usually averages only about 45 batches. Under identical job conditions, and with same auxiliary equipment, Koehring 34-E *twinbatch* gains 5 extra batches an hour . . . 40 extra batches daily. Yet, it requires only approximately 3 extra batches a day to offset the slight additional cost of the 34-E *twinbatch*

Paver. That leaves a net gain of 37 extra batches daily to help maintain schedules, handle more jobs per season, and earn more profits per job. There's no extra paver operating expense, service or maintenance, because the 34-E *twinbatch* is as simple as a single drum machine. Basic units are the same, except for double compartment drum . . . and, with split-second Autocycle control, every mixing operation is automatic, accurate and fast.

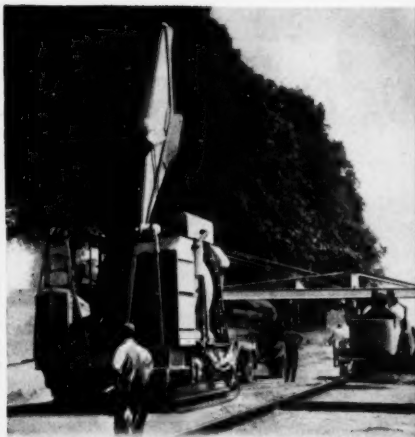
See for yourself why you will be miles ahead on your highway, airport and other big production paving contracts with a Koehring 34-E *twinbatch* Paver. Get complete information from your Koehring distributor, or write for new 18-page catalog.

KOEHRING COMPANY, Milwaukee 16, Wis.



KOEHRING *twinbatch*® PAVERS

MAJOR U.S. COMPANIES: PARSONS • W. F. KELL • HERRICK



Roomy, flow-line skip is 120" wide for charging with dual-tired batch trucks . . . big throat discharges almost full batch during 8-second skip hoist. Special A-frame elevates boom 30', discharges bucket 15½' high.



Kochring rubber-tired 16-ft twinbatch has 60' elevated boom, discharges controlled batch at 21' height (higher with special boom). Mixes, distributes up to 50 cu. yds. per hour. Travels job to job at 6 m.p.h.



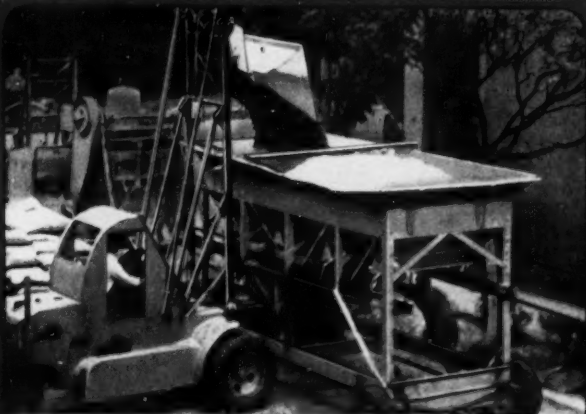
For "timely", precision-finishing with plenty of reserve speed, Kochring Longitudinal Finisher operates at almost twice the speed of a modern 34-E paver . . . produces mechanically-accurate slabs 8 to 30' wide, uniform crown transitions, 1-man operation.



12.6 m.p.h. TRENCHMOBILE® on rubber tires

makes fast, self-powered moves between jobs . . . excavates for mains and service connections . . . digs 8 in. or 12 in. wide, 5 ft. deep. Digging feeds range up to 20 ft. per min. Telescopic ladder boom with hinged crumpler undercuts sidewalks, makes vertical set-ins . . . saves hand cleanup. Buckets on this Parsons heavy-duty Model 88 have easy-in, easy-out "Tap-In" teeth, self sharpening and quickly replaceable. Hydraulically operated backfill blade optional. Other models: 2 wheel-types, 3 ladder-types full crawler mounted.

PARSONS Company, Newton, Iowa (Kochring Subsidiary)

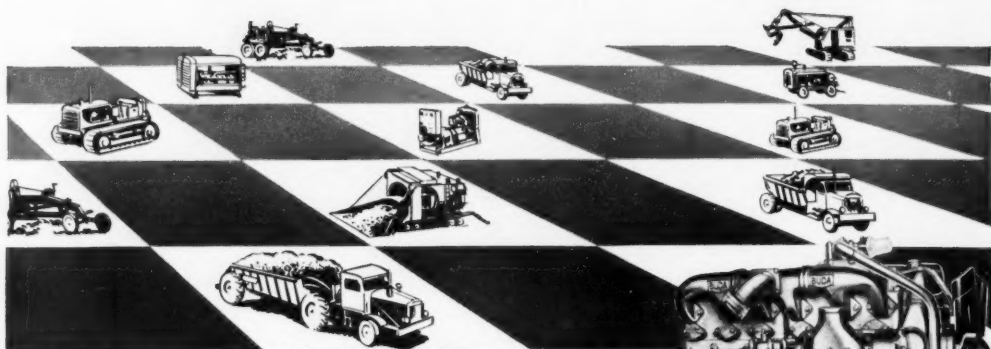


LO-BIN Batcher holds 8, 20, or 30 tons

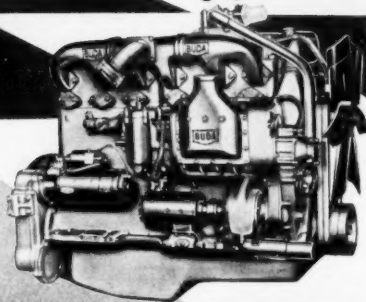
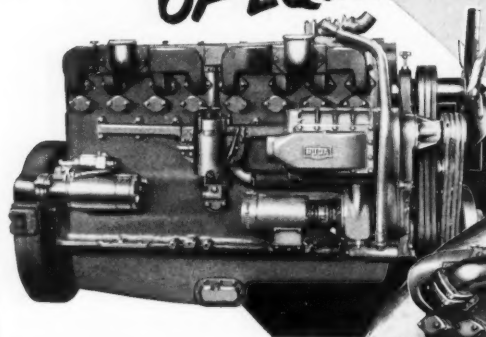
. . . has low charging height. 8-ton Johnson Lo-Bin Trolley Batcher is only 7½ ft. high; flared extension panels give 20-ton capacity at 8½ ft. height, 30 tons at 9½ ft. Has 2, 3 or 4 compartments, up to 4 weigh beams, 22 or 44 cu. ft. weigh hoppers . . . also can be arranged for 2 or 3 aggregates and 1 bulk cement compartment. Efficiently serves 28-S, 16-S, 11-S, 6-S mixers. Quickly dismantled, easily moved on dump truck. Optional: wheels, tires, tow bar. See your Johnson distributor, too, for mix plants, buckets, bins, silos.

C. S. JOHNSON Company, Champaign, Ill. (Kochring Subsidiary)

the smart move is to Buda Diesels



**FOR EVERY TYPE
OF EQUIPMENT**



Make your equipment pay a profit every hour it operates. Specify or re-power with Buda Diesels—the BIG displacement engines that give you *all* the plus values that mean lower costs and greater efficiency.

Take advantage of Buda Diesels' 13 to 25% more displacement and power . . . 10 to 17% higher torque and greater lugging ability . . . increased fuel economy . . . less maintenance and downtime . . . and their proven record of longer operation between overhauls.

Your nearby Buda Engine Distributor can prove the money-making advantages of Buda Diesels in your equipment. Ask him today. Write for Bulletins and data. THE BUDA COMPANY, Harvey, Illinois.

a Power-Full and Dependable Name in Engines...

BC-20

BUDA

Manufacturers of Diesel and Gasoline Engines, Maintenance of Way Products, Lifting Jacks, Earth Drills and Material Handling Equipment

For Moderate Income Families in Large Cities

(Formerly referred to as the "Cost of Living Index," compiled by the Bureau of Labor Statistics)

This table indicates the average changes in retail prices of selected goods, rents and services bought by the average family of moderate income from January 15, 1950 to March 15, 1952.

They are presented here for use by employers who may wish to take these cost of living data into consideration when contemplating adjustments of wages based on increased living costs.

The Bureau of Labor Statistics surveys 10 key cities every month and 24 other large cities quarterly. Prices are obtained on food, fuel, apparel, house furnishings and miscellaneous goods and services. Rental information is obtained quarterly only for all cities. The computations are based on the indexes for the years 1935-39, which are taken as the average of 100 points.

	1950			1951			1952		
	JAN. 15	FEB. 15	MAR. 15	JAN. 15	FEB. 15	MAR. 15	JAN. 15	FEB. 15	MAR. 15
Average.....	166.9	166.5	167.0	181.5	183.8	184.5	189.1	187.9	188.0
Birmingham, Ala.....	166.9	166.4	168.4	188.2	189.8	190.6	194.7	193.9	193.6
Mobile, Ala.....			166.2			181.9			187.9
Los Angeles, Calif.....	166.9	166.1	165.9	181.3	184.1	185.6	190.0	190.7	190.9
San Francisco, Calif.....			172.3			188.7			193.1
Denver, Colo.....	164.5			184.9			192.3		
Washington, D. C.....		163.6			179.2			183.9	
Jacksonville, Fla.....			174.8			190.4			195.6
Atlanta, Ga.....		168.3			187.5			195.2	
Savannah, Ga.....	169.1			189.2			200.3		
Chicago, Ill.....	172.3	172.0	172.9	185.4	188.5	189.1	194.1	191.9	192.7
Indianapolis, Ind.....	170.6			184.4			190.9		
New Orleans, La.....		170.6			187.9			190.5	
Portland, Me.....			163.7			175.7			180.6
Baltimore, Md.....			170.1			188.6			193.0
Boston, Mass.....	161.5	160.7	162.0	173.5	175.5	175.8	180.0	179.3	179.1
Detroit, Mich.....	168.5	168.1	168.3	184.2	186.2	187.0	192.0	190.7	190.7
Minneapolis, Minn.....			167.1			183.2			188.0
Kansas City, Mo.....	160.6			175.6			182.3		
St. Louis, Mo.....						185.2			190.2
Manchester, N. H.....	167.1		167.4	180.6			187.0		
Buffalo, N. Y.....	164.8			180.8			188.3		
New York, N. Y.....	163.7	163.7	164.0	177.8	180.8	180.4	184.2	183.0	182.4
Cincinnati, Ohio.....	167.7	167.2	167.9	182.3	183.9	184.4	188.3	187.1	187.5
Cleveland, Ohio.....		168.7			186.2			191.8	
Portland, Ore.....	173.8			190.4			199.0		
Philadelphia, Pa.....	165.9	165.1	166.0	181.0	185.4	185.6	188.9	187.1	187.8
Pittsburgh, Pa.....	169.9	169.5	169.5	183.4	185.6	186.0	192.2	190.9	190.3
Scranton, Pa.....		163.7			180.8			184.2	
Memphis, Tenn.....			169.4			186.5			190.2
Houston, Tex.....	172.8	172.0	172.9	190.1	191.0	192.4	195.4	194.3	194.3
Norfolk, Va.....		167.1			187.1			192.3	
Richmond, Va.....	161.8			179.8			183.8		
Seattle, Wash.....		171.6			188.3			195.3	
Milwaukee, Wis.....		167.6			187.5			195.1	

"For Rough, Tough Jobs Adams Motor Graders are Tops"

—says KEELOR CONSTRUCTION CO.



• On the job pictured above, a 100 hp. Adams Motor Grader is helping to grade, widen and resurface 8 miles of road in the rock area of Pennsylvania—than which there is none rougher or tougher.

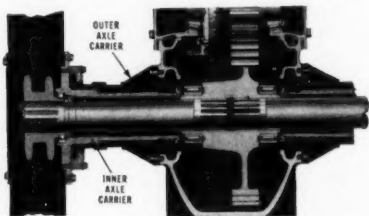
Keelor Construction Company, owner of this machine, says, "We consider Adams the best motor grader on the market, as evidenced by our recent purchase of another one of these big machines. Not only does its 100 hp. high-torque diesel engine have the lugging ability to handle roughest, toughest work, the whole machine has exceptional strength and stamina."

Performance like this is typical of all Adams Motor Graders, making them first choice of more and more contractors and highway officials. All models—from largest to smallest—offer such important advantages as 8 Overlapping Forward Speeds • High Arch Front Axle • Positive Mechanical Controls • Wide Range of Blade Adjustments • and many others.

Ask your local Adams dealer to demonstrate how these great machines will step up operations and cut costs—for you!

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

ADAMS FULL-FLOATING REAR AXLE



In all Adams Motor Graders rear-end weight is borne entirely by heavy inner and outer axle carriers. The axle serves only to drive the machine—is not subject to the shocks and stresses that cause most axle failures in other graders.

*Make your next
motor grader an*



Sidelights for Contractors

By John C. Hayes, Legal Adviser

Taxes

Interest Payments.—Where a husband agreed with his wife to pay her 25% of the net profits of his business in lieu of interest on funds she had loaned him, a circuit court allowed his deduction of such payments as interest despite the fact that the amounts paid her exceeded usual interest charges. The court pointed out that the Internal Revenue Code does not require that deductible interest be ordinary and necessary or even that it be reasonable, and that interest includes whatever sums a taxpayer has actually had to pay for the use of borrowed money.

Kickbacks.—The Tax Court has refused to allow a partnership to deduct as business expenses the amount of kickback payments made to a customer's purchasing agent without the knowledge of the latter's employer. The court classified such payments as bribes and thought the case distinguishable from one recently before the Supreme Court in which somewhat similar payments were justified as conforming to standard business practice in the line of trade there involved.

Retirement Pay.—Although the Internal Revenue Code exempts amounts received "under workmen's compensation acts, as compensation for personal injuries or sickness," a circuit court held this exemption inapplicable to payments received by a 64-year-old former employee where it appeared that his retirement had been ordered for age rather than for some permanent physical injuries suffered as a result of his employment duties.

Work Clothing.—To be deductible as a business expense, work clothing must be of a type specifically required as a condition of employment and not adaptable to general or continued usage to the extent that it takes the place of ordinary clothing. Under this general rule, the Tax Court refused to allow a construction engineer to deduct the cost of felt boots purchased while he was working on a project in a very cold climate, since the boots were thought to be part of his general winter clothing and their use not confined to his work. In the case of a railroad

fireman, however, the court allowed deductions for the purchase of boots and gloves but not for his other work clothing. A plumber, in a third case, could not deduct the costs of his work clothing and laundry thereof.

Permanent Improvements.—A district court has allowed a property owner to increase the cost basis of his residence, for purpose of computation of taxable gain on its sale, by the amount he claimed to have expended thereon for improvements during his years of ownership, despite the lack of bills or receipts. In disagreeing with the bureau's disallowance of the claim for lack of proof, the court remarked, "... we are not permitted to disregard the unrefuted testimony of a reputable witness merely because he is a taxpayer."

Family Corporations.—Where a family-held corporation entered into a sublease to one of its stockholders at a rental very substantially less than the profits which there was every reason to believe the corporation otherwise could earn, a circuit court found that the sublease served no legitimate business purpose, that the income was taxable to the corporation, and that the profits received by the stockholder were taxable to her as dividends received.

Accounting Method.—Error by a taxpayer who kept his books on an accrual basis in making out his tax returns on a cash basis does not justify the Commissioner of Internal Revenue, according to a decision by a circuit court, in adding to the taxpayer's income the amount of accounts receivable which rightfully belonged in a prior year but which was erroneously not then reported.

Accumulation of Surplus.—A district court has ruled that a retention of earnings for 1944 by a newspaper corporation was not unreasonable and did not justify the imposition of a Section 102 surtax, where the sums were kept to pay the cost of new presses and a building program to which the corporation was committed. This decision was contrary to unfavorable judgments which had been rendered against the corporation for 1942

and 1943, but the court stated that each case must be determined under its own facts and circumstances.

Public Contracts

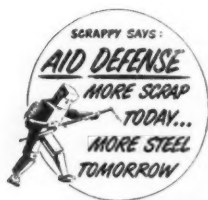
Cost-Plus Contract.—The Court of Claims has upheld the reimbursement to a shipbuilding corporation under a World War II cost-plus Navy contract governed by T.D. 5000 for such costs as legal and accounting fees, directors' expenses, salaries of public relations employees, business association dues, and charitable contributions. A factor in the taxpayer's favor, however, was that it was in existence only during the war years and could not be suspected of making such expenditures to promote future business. The court also ruled that the corporation's cost of contract supplies for which it was to be reimbursed included all cash discounts up to one percent earned on supply purchases; and further, that failure by the corporation to appeal to the Secretary of the Navy from one adverse bureau ruling on a claim did not bar its suit thereon in the Court of Claims, since the Secretary had decided unfavorably on other similar claims of the corporation and appeal to him would have been in vain.

Liquidated Damages.—Under a government contract's liquidated damage clause which, unlike the separate delays-damages clause in the same contract, made no exception of delays occasioned by act of God, a court of appeals has held that the contractor was liable for liquidated damages for delay due entirely to extreme weather conditions.

Contract Settlement.—A Senate committee has reported favorably on a bill to abolish the Appeal Board of the Office of Contract Settlement. This action was recommended by the General Services Administration because of the decline in number of cases before the board. The Senate committee's report points out that, even if the board is abolished, an aggrieved contractor may still bring suit against the United States in the Court of Claims or a federal district court, as provided in section 13 (b) (2) of the Contract Settlement Act of 1944.



Grandpa Never Threw a Thing Away



It's only human to want to hold on to things after they've outlived their usefulness. That's why today millions of tons of worn-out and obsolete equipment and machinery are lying forgotten in the country's plants and factories and on farms.

The steel industry needs these millions of tons of dormant scrap, needs

it in the worst way. With this vital dormant scrap the entire steel supply picture would brighten up, with more steel for everybody. But without it, the steel industry cannot hope to keep up production at present levels.

Call in a scrap dealer now, today. He will buy your dormant scrap and start it moving toward the steel mills.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

More Scrap Today... More Steel Tomorrow

The Right to Be Heard

WHEN HIGHLY PUBLICIZED Congressional hearings produce injurious allegations by witnesses who may be seeking publicity or whose competency is unknown, a serious wrong is committed. When the victim is publicly condemned by committee members only on the basis of such accusations, the wrong is greatly accentuated.

The victim, of course, may issue a statement to the public press, but it obviously does not carry the same weight as when made in the committee's public forum.

The result, in effect, is a "court," in which the prosecution is heard with no defense, and the jury is the great American public.

Denial of the right to be heard under such circumstances is exemplified in recent hearings where waste has been charged in the construction of "secret" defense bases overseas by American contractors. The competency of witnesses has been questioned, and the firms have requested an audience.

The reputable construction firms involved, and indeed, the construction industry, have been injured by the publicized charges and the denial of an immediate opportunity for rebuttal.

While it is not the purpose of *THE CONSTRUCTOR* to present the defense here, it is pertinent to point out that rush defense and war jobs present a fertile field for accusations of "waste." Under circumstances involving speedy work under high pressure, hasty or incomplete planning, dealings with foreign governments, and changed plans and strategy, "waste" is an inherent ingredient of getting done whatever job or jobs are finally decided upon, at the place as finally determined, when desired, and according to the specifications as finally determined.

THE CONSTRUCTOR does not intend to criticize Congressional investigations in general. However, the conduct of such investigations should be carefully carried out to avoid unjust consequences or dropping into the range of "headline-hunting" charges in an election year.

Under our system of laws and democratic processes, the accused is accorded the right of defense in court.

The right to be heard should immediately be given firms or individuals whose reputations are attacked before the jury of the American people.

Naming of Subcontractors

NATIONAL ASSOCIATIONS of mechanical specialty contractors have now gone to Congress to ask for legislation which would require general contractors to name in their bids the subcontractors they propose to use on federal construction contracts, and to otherwise encourage greater use of specialty contractors. (See page 25)

The spokesmen for these groups accused general con-

tractors of various evils and glossed over the practices of many of their members and some of their motives for seeking the legislation. They slanted their testimony also to have the appeal, during an election year, of protecting the small businessman.

Two government representatives opposed the bill on the grounds that there were not only no advantages for the government but also definite disadvantages.

Commencing about the middle of May, representatives of the A.G.C. and its chapters will appear before the committee to oppose the legislation. Two years ago when the specialty contractors approached the A.G.C. to see if a common approach could be made on legislation for the award of separate mechanical contracts or the naming of subcontractors, the A.G.C. Executive Committee gave thorough consideration to the question and concluded:

"The A.G.C. understands the importance and problems of specialty contractors, but does not favor the naming of subcontractors in the general contractor's bid, and does not recommend that its members become parties to any bid depository system. The responsibilities of general contractors for handling subcontracts in a manner equitable to all parties are set forth in Section 3 of the A.G.C. Code of Ethical Conduct. The problem is one which can be handled more satisfactorily to all parties concerned through improvement of industry relationships than by additional legislation."

The public interest will not be served by passage of this legislation.

Contract Renegotiation

SOME OF THE RECOMMENDATIONS with respect to construction contracts made to the Renegotiation Board by The Associated General Contractors of America have been put into effect in the regulations, and others are under study. (Page 29.)

In presenting the recommendations, the A.G.C. stated in part:

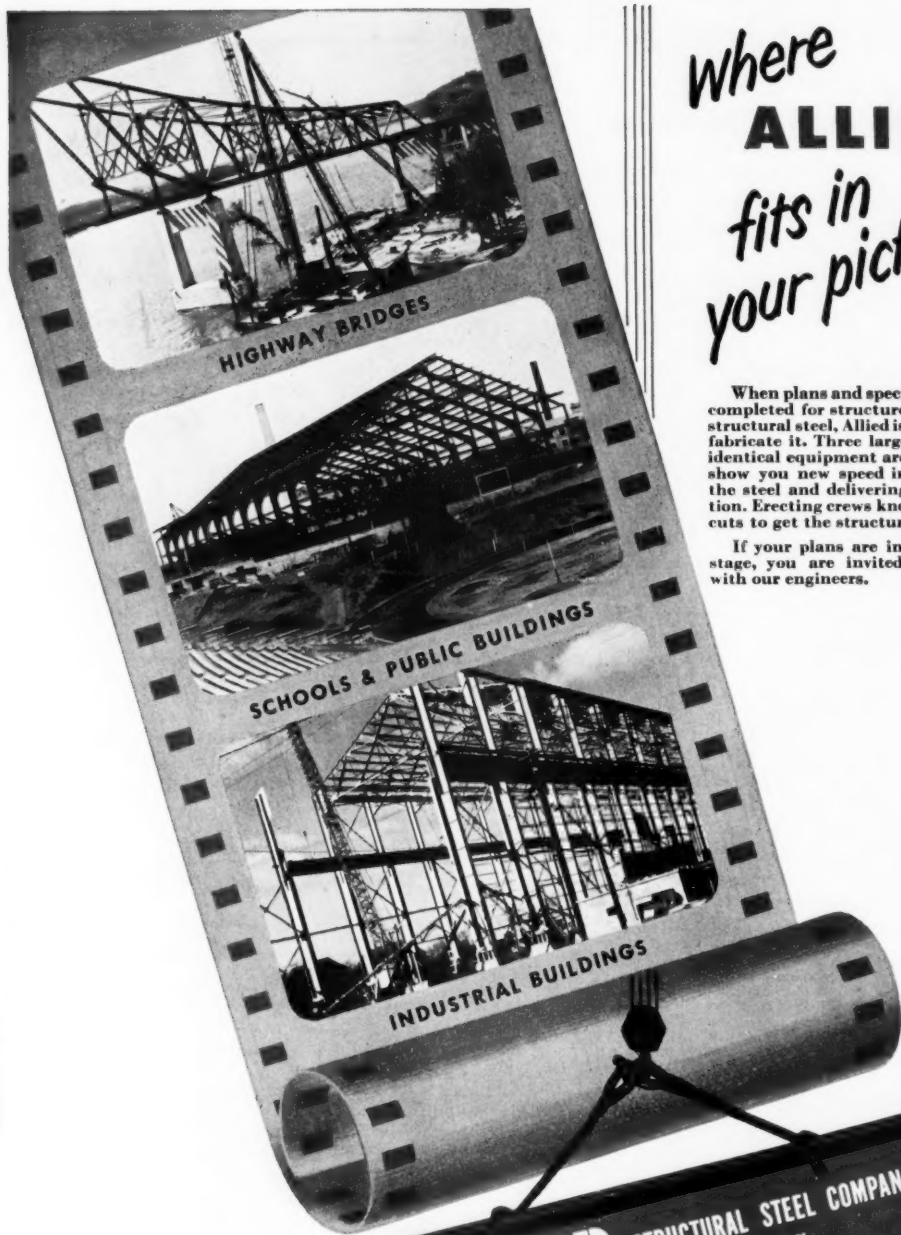
"These recommendations are made in the belief that they will serve the best interests of government contracting agencies and the Renegotiation Board. We do not believe that our recommendations will lead to general contractors making excessive profits, because in all cases the public interest will be adequately safeguarded without renegotiation. We believe the exemption from renegotiation of the recommended types of construction contracts will serve to eliminate one of the uncertainties of performing construction work for the government, and thereby eliminate one of the contingencies against which a contractor will seek to protect himself."

The public interest will be served when the Board has the opportunity to give more study to, and act upon, other A.G.C. recommendations.

Where
ALLIED
*fits in
your picture*

When plans and specifications are completed for structures calling for structural steel, Allied is equipped to fabricate it. Three large shops with identical equipment are prepared to show you new speed in fabricating the steel and delivering it on location. Erecting crews know the short-cuts to get the structure up fast.

If your plans are in the talking stage, you are invited to consult with our engineers.



- Clinton Bridge Corporation
- Gage Structural Steel Corporation
- Midland Structural Steel Corporation

ALLIED STRUCTURAL STEEL COMPANIES
Engineers • Fabricators • Erectors
20 NORTH WACKER DRIVE, CHICAGO 6, ILLINOIS

Fabricators and erectors of structural steel for highway and railroad bridges; Industrial, office, school, and government buildings; Airport structures; Harbor facilities.

» SINCE the end of World War II there has been a very marked increase in both the number and size of failures in the construction industry according to recent surveys. This trend is borne out by Dun and Bradstreet's Statistical Review and by surveys currently being made by The Surety Association of America.

Construction failures in 1951, according to Dun & Bradstreet, "were more numerous than any time in the past 17 years. All other industry and trade groups reported fewer failures than in 1950." In 1951, for example, Dun and Bradstreet showed an increase of about 5% in the number of construction failures and an increase of 46% in the amount of current liabilities over 1950. It is even more interesting to note that more than 80% of this increase in liabilities has occurred in cases where the liabilities at the time of failure were between \$100,000 and \$1,000,000.

Contract Defaults 91% of Total

Likewise, the Surety Association of America reports that, considering surety classifications only, the contract bond premium volume of 1946 to 1950 was 60% of the total surety premium volume whereas contract defaults during this period accounted for 91% of all surety losses.

Expansion Tops \$17 Billion

U. S. industry's expansion movement under certificates of necessity reached and passed the \$17 billion mark last month.

The fast-amortization lure has stimulated plans for 9,169 new or expanded facilities since it was first used 14 months ago. Much of the construction involved is still incomplete, the Defense Production Administration reports. As of March 31, the agency estimated only 52% in place.

Another 10% will be completed in 1952 and, by the end of 1953, 94% will be in place, the agency believes. Construction accounts for about 31% of the total expenditure for industrial expansion.

Certificates of necessity provide tax benefits to industries willing to increase productive capacity to meet the current emergency. Under the program, such an enterprise is allowed to amortize for tax purposes a percentage of its approved expansion in five years instead of the normal 25 years.

Marked Increase in Construction Failures

• Controls, Taxes, Competition, Overexpansion, Inflation Cited

(Prepared for THE CONSTRUCTOR by Surety Association of America)

Because of the complexities involved in assembling statistics, the exact loss figures for 1951 are not yet available. However, the continuous trend surveys of the Surety Association show that 1951 produced an avalanche of losses, that the ratio of surety losses for 1951 was 75% greater than 1950 and that contract bond losses will be even higher.

Due to the vast scope and many ramifications of the construction industry, it is difficult to precisely ascribe the reasons for this trend, however, many experienced surety underwriters and credit men ascribe these failures to such causes as the undertaking of long term contracts at fixed prices or overexpansion followed by a surge of inflation after Korea, a gradual diminution of working capital caused by delays in collecting accounts receiv-

able and by high taxes and the intense competition in different geographical areas stemming from the reduced volume of certain types of work caused by material and credit controls.

Called "An Alarming Trend"

While this alarming trend should provide food for serious thought among contractors, awarding and renegotiating officials, bankers, credit men and others connected with the construction industry, Martin W. Lewis, general manager of The Surety Association of America, commented recently that notwithstanding this trend, the surety industry has the highest regard for the skill, integrity and responsibility of the contracting fraternity as evidenced by the huge surety credit extended in support of its obligations.

NPA Approves 1,599 Non-Defense Projects

• Churches Lead List; Unemployment Areas Receive Attention

» WITH the approval of 1,599 miscellaneous projects from second quarter applications, more than \$726 million in construction throughout the nation has been given material allotments for the second and succeeding quarters. Of the total, 1,250 projects are new starts, representing about \$365 million.

The projects include a wide list of types, such as municipal, institutional, recreational, commercial, amusement.

In making the announcement, the National Production Authority also stated that an additional 350 applications costing an estimated total of \$160 million had to be deferred for later action.

In distributing the projects, special attention was paid to those areas in which unemployment in the building trades has been caused by the lack of industrial expansion construction and the slack in normal construction due to construction regulations which have shunted materials to the more necessary projects.

A breakdown of the approvals by 45 categories of construction shows churches lead the list with 638 projects at an estimated cost of more than \$142 million. Other large categories

are office and loft buildings with 84 projects costing over \$133 million, and retail stores with 161 projects at a cost of more than \$78 million.

The announcement, made April 17, included two special lists of projects. One list consists of 551 projects costing an estimated \$306.9 million distributed throughout 13 areas which were given either allotments of materials, approvals with no allotments required, or which were exempt from the necessity of NPA approval under self-authorization procedures.

Municipal and Religious, Also

The other list is made up of projects in three special categories: Municipal and religious; hardship cases (those which are necessitated by fire loss, demolition or condemnation); and critical unemployment area construction. Total cost of projects in this latter list is estimated at \$104.5 million.

A geographical breakdown of the 1,599 approved projects shows California leading the country with 254 projects costing more than \$146 million and New York second with 156 projects costing over \$118 million.

'52 Structural Steel Allotments Compared

CLAIMANT AGENCY	(Tons)		
	1st Quarter	2nd Quarter	3rd Quarter
Agriculture Department.....	4,000	8,910	9,000
Army Department.....	13,000	12,870	14,000
Atomic Energy Comm.....	43,500	20,642	23,591
Civil Aeronautics Admin.....	5,400	7,920	8,000
Defense Department.....	163,490	212,628	212,191
Defense Electric Power Admin.....	137,976	148,500	120,000
Defense Fisheries Admin.....	0	218	200
Defense Materials Procurement Agency.....	17,000	18,850	17,000
Defense Solid Fuels Admin.:			
Coal Mine Construction.....	4,040	8,910	8,000
Coke Oven Construction.....	5,772	7,920	9,000
Defense Transport Admin.....	24,500	24,255	35,000
Federal Civil Defense Admin.....	563	99	250
Federal Security Agency:			
Education.....	26,013	29,235	40,000
Hospitals.....	19,004	18,315	25,000
General Services Admin.....	4,500	4,950	5,000
Housing & Home Finance Agency.....	10,500	7,425	7,500
Interior Department.....	1,459	1,386	670
Maritime Admin.....	15,952	19,503	18,700
OIT-MSA.....	29,300	30,647	40,000
Petroleum Admin. for Defense.....	55,000	51,480	80,000
Public Roads, Bureau of.....	56,000	80,600	125,000
Veterans Admin.....	5,472	3,366	3,100
<i>National Production Authority Divisions</i>			
Agricultural Mach. & Impl. Div.....	16,000	17,980	18,400
Aircraft Div.....	8	0	78
Aluminum & Magnesium Div.....	0	0	0
Building Materials Div.....	4,566	5,345	5,100
Canadian Div.....	58,000	55,152	55,000
Chemical Div.....	0	0	0
Communications Div.....	4,100	4,115	4,000
Construction Machinery Div.....	35,721	35,615	42,000
Consumer Durable Goods Div.....	910	0	0
Containers & Packaging Div.....	0	249	300
Copper Div.....	0	36	30
Electrical Equipment Div.....	4,584	12,580	13,500
Electronics Div.....	91	246	250
Engine & Turbine Div.....	31,614	33,724	36,800
<i>Facilities and Construction Bureau:</i>			
Construction Controls.....	12,179	16,285	40,000
Industrial Expansion.....	360,768	268,140	183,000
General Components Div.....	0	0	0
General Industrial Equipment Div.....	77,212	62,297	60,000
Iron & Steel Div.....	13,000	17,084	10,000
Leather & Leather Products Div.....	274	179	200
Metal Working Mach. & Equip. Div.....	34,983	29,984	33,000
Mining Mach. & Equip. Div.....	13,000	10,399	10,500
Misc. Metals & Minerals Div.....	0	0	0
Motion Picture—Photo. Prod. Div.....	91	0	0
Motor Vehicle Div.....	15,000	6,399	6,400
Ordnance & Shipbuilding Div.....	14,900	16,786	23,000
Printing & Publishing Div.....	1,000	346	345
Pulp, Paper & Paperboard Div.....	0	0	0
Railroad Equipment Div.....	165,876	151,025	161,745
Rubber Div.....	175	172	150
Scientific & Tech. Equip. Div.....	410	1,236	1,200
Service Equipment Div.....	690	1,408	1,025
Water Resources.....	21,170	19,800	18,000
NPA (Excluding Reserves).....	886,322	766,582	724,023
NPA Reserves (self certifications, etc.).....	67,851	114,564	131,172
GRAND TOTAL.....	1,596,616	1,599,775	1,656,397
SUPPLY.....	1,425,000	1,425,000	1,425,000
% of Supply.....	112.0	112.3	116.2

Non-Defense Steel Increased

» VERY SUBSTANTIAL increases in structural steel allotments for commercial, road, hospital and school construction should turn up in the third quarter of this year, according to the Defense Production Administration.

The increase in the controlled material for these construction activities is directly related to the decrease in the demand of the industrial expansion program which reaches its peak in the middle of the second quarter, DPA authorities explained.

Allotment of structural steel for the third quarter for the industrial expansion program was 183,000 tons compared to 268,140 tons for the second quarter. Correspondingly, the third quarter allotment for commercial construction was 40,000 tons compared to 16,285 tons for the second quarter.

Third quarter allotment authority of the Bureau of Public Roads is 125,000 tons of structural steel compared to the second quarter 80,600 tons. The allotment authority of the Federal Security Agency was upped from 29,235 tons of structural steel to 40,000 tons for school construction and from 18,315 tons to 25,000 for hospital construction.

The table on the right gives a comparison of allotments of controlled materials for the first three quarters of 1952. The Facilities and Construction Bureau of the National Production Authority is the claimant agency for commercial construction.

Self-Authorizations Raised

An increase in self-authorizations for school and road projects was announced last month by the National Production Authority.

An amendment in CMP Reg. 6, to become effective before July 1, will permit building contractors to self-authorize up to 50 tons of carbon steel, seven tons of which can be structural shapes, and 1,000 pounds each of copper and aluminum for each school project, not for the quarter.

Similarly, the increase for highway contractors will be up to 25 tons of carbon steel of which 12 tons can be structural shapes, and 200 pounds of copper; the amounts being per project and not per quarter. Smaller amounts now in effect are per project per quarter.

Chamber Reaffirms Competitive Bid Policy

The 40th annual convention of the U. S. Chamber of Commerce met in Washington, D. C., last month and reaffirmed its policy on competitive bidding for construction contracts.

The statement declared, "Competitive bidding for construction contracts is the accepted method of securing economy and efficiency in public construction. While, in an emergency, special consideration may require temporary resort to other methods of awarding contracts, normal practices of firm negotiations—firm quotations, firm delivery commitments, and firm orders—should be resumed as rapidly as possible. This policy does not apply to professional design services, which should never be obtained through competitive bidding."

The Chamber of Commerce also recognized the importance of apprentice training programs in the construction industry and urged members "to encourage such programs for instilling construction and other trade skills in young men."

T-H Amendment Reported Out

An amendment to the Taft-Hartley Act has been recommended by the Senate Labor Committee to permit building trades unions and contractors to make collective bargaining agreements before workers had been hired for a particular construction job.

Other Labor Relations Developments—Page 39

The change in the labor law would also cut the waiting time for joining a building trades union from 30 to seven days and would provide for a "speeded-up" National Labor Relations Board representation election where a union, in good faith, challenged the employer's recognition of a particular union.

Assistant Managing Director J. D. Marshall, in an A.G.C. statement filed last August with a Senate Labor subcommittee, pointed to the need for a change in the law which would permit collective bargaining between the union and general contractors before men had been employed at the site.

But he added, "It is my opinion . . . that general contractors would oppose shortening from 30 days to seven days the period a man may work under a union security agreement without maintaining union membership . . ."

Noting the large volume of construction activity in prospect and the high average age of skilled journeymen, the association thought it "imperative" that apprenticeship and other training "be further accelerated and greatly intensified."

President Arthur S. Horner and Past Presidents W. A. Klinger and M. W. Watson were among representatives of The Associated General Contractors of America attending the convention. Mr. Watson was re-elected a national director, serving on the Construction and Civic Development Department Committee.

Army Has Emergency Designs

Based on World War II experience, the Corps of Engineers has produced after two years of study, cost-saving designs for 245 different types of emergency military buildings.

The designs will be used when the most expeditious and economical type of construction is necessary to produce army camps. The buildings will have a life expectancy of three to five years and the designs have been prepared for three different temperature zones.

With the exception of the cement floors and masonry walls of utility rooms, the buildings will be constructed of standard mill cuts of lumber throughout. They will be about eight feet high and 25 feet wide. Barracks will be built in a "U" shape, one story high, and will house 80 men.

Various types of wall coverings can be used and the sliding horizontal window has been substituted for the more expensive double hung type.

NPA Imposes Steel Embargo

The steel embargo imposed April 29 by the National Production Authority applies only to manufacturers of consumer durable goods and other products considered non-essential and to exports to conserve supplies.

While its effects on construction were not immediately determinable, the agency, in the event of a prolonged strike, may issue orders limiting deliveries to other consumers, including construction.

The strike will delay NPA's plans to make additional steel available to construction, the agency said.

Corps to Keep Civil Functions

A reorganization plan to transfer the civil functions of the Corps of Engineers to the Interior Department and place them, together with functions of the Bureau of Reclamation, under a civilian director, was reported dropped late last month by the White House.

Rumors of the plan, which would largely follow recommendations of the Hoover Commission, had been circulated widely early in April. Under the Reorganization Act, it would have required a constitutional majority of either House to defeat it, within 60 days after submission by the President. Press associations later reported the White House dropped it.

Asks More Funds

Announcement that it would not be submitted came after the President had visited the scene of the Missouri Valley flood and conferred with governors of the states affected. Lt. Gen. Lewis A. Pick, Chief of Engineers, asserted there that had appropriations kept pace with the flood control plan, the flood would not have occurred. (See page 72.) The President returned with renewed requests for adequate flood control funds.

The flood disaster gave rise to new demands for valley authority legislation from the usual parts of the public press, which directed criticism at the Corps of Engineers.

Judicial Review Bill Slated

A new bill and a favorable report for legislation to offset the effects of the Supreme Court decision in the Wunderlich case and to provide for judicial review of disputes arising from department decisions on federal contracts were expected from a Senate Committee early in May.

Principles for legislation to clarify the disputes clause of the standard government construction contract form and to provide for the right of court review of disputes were outlined by The Associated General Contractors of America in February.

Numerous conferences have been held by members and staff of the Senate and House Judiciary Committees, with others, for the purpose of drafting suitable legislation. A.G.C. representatives have been assured that favorable action will be taken by Congress at this session.



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» REPRESENTATIVES of the mechanical specialty contractors appeared before a subcommittee of the Senate Judiciary Committee on April 29 to support S. 2907, the principal purposes of which are to require general contractors to name specialty contractors in their bids for federal projects and to further encourage use of specialty contractors.

Two government representatives opposed the bill. Representatives of The Associated General Contractors of America were to be heard at a later date in opposition to the bill.

National associations of specialty contractors represented at the public hearing by officers were the National Electrical Contractors Association; National Association of Master Plumbers, and Heating, Piping and Air Conditioning Contractors National Association.

Statements were also presented in support of the bill by the general presidents of the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry and the International Brotherhood of Electrical Workers.

Accuse General Contractors

With varying degrees of vituperation, the spokesmen for the specialty contractors accused general contractors of bid shopping, chiseling and other evils.

The principal points made were that this legislation was needed to give specialty contractors more opportunity to carry out work executed under cost-plus-a-fixed-fee contracts, that in the bidding for lump sum contracts the general contractor should name the specialty contractors proposed for the work, and that if the subcontract were awarded to a specialty contractor other than the one named and for a lower price the saving should revert to the government.

The bill was hailed as a cure for bid shopping. Bid peddling and other practices of specialty contractors were glossed over with as little mention as possible by their spokesmen. Attempts were made to cite examples of the evils alleged to be perpetrated by general contractors.

Government Opposition Expressed

Government representatives appearing in opposition to the bill were Major General G. J. Nold, Deputy Chief of Engineers, and Commissioner of Public Buildings W. E. Reynolds. Commissioner Reynolds stated:

Seek Naming of Subcontractors In Bids for Federal Projects

- General Contractors Impugned in Senate Hearings
- Government Officials Oppose Bill; A.G.C. to Be Heard

"General Services Administration has devoted considerable time and effort to an impartial and objective study of the bill. Several conferences have been held with the sponsors' representatives and the material and data submitted by such representatives has been carefully reviewed and analyzed.

"Our conclusions, however, fail to indicate any benefits that would accrue to the government should the bill be enacted. Indeed, its general purport is objectionable for several reasons.

"The bill would impose a heavy administrative burden upon construction contracting agencies without corresponding benefits by requiring administrative supervision over certain specified subcontracting operations of the prime contractor thereby relieving him of a portion of his managerial responsibility. It establishes rigid contracting procedures by means of legislation which are more properly the administrative responsibilities of the contracting agencies. It is understood that the sponsors of the bill contend that its enactment would result in savings to the government. On the contrary, it would appear that it will cost the government more money in the long run as hereinafter indicated.

"I am forced to the conclusion that the various burdens and requirements imposed by the bill on contractors may well result in discouraging what might otherwise be low bids and thereby result in increased costs rather than in savings to the government."

General Nold Cites Problems

In his testimony, General Nold stated in part:

"By requiring the approval of subcontractors by the government and by requiring the names of such subcontractors to appear in the contract documents, there are created at least two major problems: (1) administrative, and (2) legal. In facing the administrative problem the government would be required to coordinate not just one principal contract but several individual contracts; and with respect to the legal problem, the government, in all probability, would be exposed to

legal difficulties in the event subcontractors, accepted or approved by the government, defaulted in their work or otherwise proved unsatisfactory.

"I believe that there should be no departure from the principle that the prime contractor shall remain solely responsible as to the selection of his subcontractors.

"The requirements of the proposed bill as they are intended to apply to CPFF construction contracts are contrary to the very nature and reason for entering into such contracts.

"The main purpose of this bill, apparently, is to eliminate what subcontractors regard as an undesirable practice in the industry. . . . This practice, if regarded to be unethical by the construction industry, is a matter to be cleaned up by the construction industry."

A.G.C. Plans Appearance

In 1950 when the national associations of specialty contractors were organizing campaigns to seek federal and state legislation to require the award of separate contracts, or the naming of subcontractors in bids, the question was considered by the A.G.C. Executive Committee after the specialty contractors asked if a common approach through legislation could be made with A.G.C. participation. Extracts from the committee's conclusions at that time are:

"The best interests of the public agency or other purchaser of construction are served when undivided responsibility for construction of a project is placed upon the general contractor.

"The A.G.C. understands the importance and problems of specialty contractors but does not favor the naming of subcontractors in the general contractor's bid and does not recommend that its members become parties to any bid depository systems.

"The responsibilities of general contractors for handling subcontracts in a manner equitable to all parties are set forth in Section 3 of the A.G.C. Code of Ethical Conduct.

"The problem is one which can be handled more satisfactorily to all par-

House Gets \$550 Million Federal-Aid Bill

• State Officials Say Funds Inadequate; Cost Increase Cited

» THE \$550 MILLION recommended by the House Public Works Committee for annual expenditures in 1954 and 1955 on the federal-aid highway program represents a 10% increase over funds authorized in 1950.

During hearings held on the authorization measure, H. R. 7340, the American Association of State Highway Officials declared that a total of \$32 billion would be needed to bring the aid program up to date. Two years ago only \$29 billion would have done the same job, they stated. The association recommended that \$810 million be authorized annually over a period of 20 years to provide for the minimum basic road needs.

The Bureau of Public Roads pointed out that from 1949 to 1951, travel on American roads has increased by 61 billion vehicle-miles and that the overall percentage increase during this period has been exceeded by the expansion of truck traffic. Public Roads Commissioner T. H. MacDonald informed the committee that costs since May, 1950, have increased 19% for highway construction and 28% for bridge construction.

Considers Increased Costs

The committee, in its report, stated, "In arriving at the total authorization of \$550 million for the federal-aid highway program, the committee took into consideration the authorization of \$500 million for each of the fiscal years 1952 and 1953 by the Federal-Aid Highway Act of 1950 and increased construction costs experienced since passage of the 1950 act. The total authorized in H. R. 7340 represents a 10% increase over the 1950 act authorizations for the federal-aid highway system. It does not now appear likely that this increase will permit the

same mileage as that provided for in the 1950 act."

The aid money, apportioned among the states on a 50-50 matching basis, would be divided among the three basic parts of the program as follows: \$247.5 million (45%) for the primary highway system, \$165 million (30%) for the secondary system and \$137.5 million (25%) for the primary highway system in urban areas.

Funds Made Flexible

The bill, as it goes to the House, includes a provision which would allow not more than 25% of the amount apportioned to any state in one year for expenditure on the primary system to be transferred to the secondary system or vice versa, thus making the program funds more flexible.

The bill would authorize funds for sundry other U. S. road projects in each of the fiscal years 1954 and 1955: for forest highway construction, \$22 million; forest development roads and trails, \$19.3 million; access roads, \$12 million; park roads and trails, \$10 million; parkways, \$10 million; Indian roads, \$10 million; the Rama road (Rama to San Benito, Nicaragua), \$4 million; and Inter-American Highway, \$8 million.

Senate Has Reclamation Bill

Bureau of Reclamation funds included in the Interior Department appropriation bill total \$180.8 million for fiscal 1952 as passed by the House.

Money which would be appropriated for construction and rehabilitation by the Bureau comes to \$153.4 million, representing a reduction of 21% from the budget estimate.

In reporting the bill, H. R. 7176, the House Appropriations Committee stated that "The policy of no new starts has been adhered to" and that "the funds provided will permit orderly continuation of construction programs" already approved by Congress.

As sent to the Senate on March 27, the bill included a 12% limitation on force account expenditures by the Bureau of Reclamation and the Bonneville Power Administration and a 20% limitation on similar use in the Alaska road construction program.

Civil Functions Bill Debated

» THE HOUSE passed and sent to the Senate the civil functions appropriation bill with the 28% reduction in budget estimates made by the House Appropriations Committee left unchanged.

The House Appropriations Committee, in cutting the Corps of Engineers' funds from the requested \$693 million to \$472.3 million, stated that it could see no reason to deviate from the policy that the "civil works program should be subservient to the defense needs of the nation."

It was pointed out in the committee's report that more than 400 harbor and flood control projects costing \$6 billion are currently under construction by the Corps of Engineers and that an additional \$8 billion in construction has been authorized.

The President, in a letter sent on April 25 to Senate Appropriations Committee Chairman McKellar (D, Tenn.), failed to support the "false economy" of the House and requested that the Senate restore \$188 million.

He maintained that the full amount requested in the budget was needed to assure the continuance of an orderly flood control program and to provide power needed by atomic energy plants. Otherwise, the program "would be thrown into wasteful confusion," he said.

Construction funds in the bill, H. R. 7268, as passed by the House on April 2 are as follows:

Rivers and harbors—\$117.7 million for construction; \$2.6 million for surveys and planning. Flood control—\$206 million for construction; \$1.2 million for surveys and planning; \$8 million for emergencies. Mississippi river and tributaries—\$44.3 million for construction; \$14.8 million for maintenance; \$250,000 for emergencies.

Including funds for operation and maintenance, total appropriations for rivers and harbors is \$187.5 million compared to the \$284.2 million requested and the total for flood control is \$221.2 million compared to the \$309.9 million requested.

Congress on April 22 unanimously approved and sent to the White House a bill providing \$25 million for flood relief in the Missouri Valley flood area. It was passed quickly and with a minimum of debate.

Naming Subcontractors—Continued

ties concerned through the improvement of industry relationships than by additional legislation."

S. 2907 was reviewed by the A.G.C. Executive Committee at its meeting in Washington, April 24-25, 1952, and plans were made for the appearance of representatives of the national association and chapters at the public hearings to oppose the bill.

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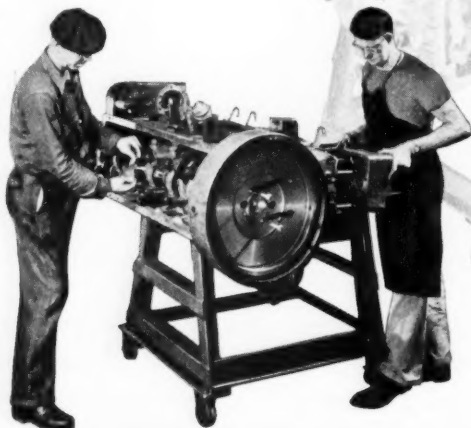
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» SOME OF the recommendations with respect to construction contracts made to the Renegotiation Board by The Associated General Contractors of America have been put into effect, and others are under study.

In response to a resolution of the A.G.C. 33rd annual convention, Board Chairman John T. Koehler wrote to A.G.C. Managing Director H. E. Foreman in part:

"As you perhaps already know, the Renegotiation Board issued its regulations on March 25, 1952 in which it adopted several of the recommenda-

Construction failures increase in number and size	-21
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Navy revokes "additive items" practice	-71
Survey of highway proposal guarantee requirements shows great variation	-78

tions made by your organization. It has exempted in section 1453.5 certain classes of construction contracts which it considered did not have a direct and immediate connection with the national defense.

Overseas Contracts Exempted

"With respect to the recommendation of your organization that the contractor be given the option of being renegotiated on an over-all basis or on a completed contract basis, I wish to direct your attention to section 1459.1 (b) (2) of the Renegotiation Board Regulations which contemplates that, in general, construction contractors will be permitted to be renegotiated on a completed contract basis notwithstanding that they may have reported their income taxes on some other basis.

"The board has also exempted certain contracts and subcontracts to be performed outside the territorial limits of the continental United States (see section 1455.2) and will exempt further contracts in this category when such action appears to be appropriate."

This action did not make a blanket exemption of overseas work, but currently permits the construction contractor to make a request through the department awarding the project for exemption from renegotiation.

Mr. Koehler concluded: "The last recommendation made by your organization with respect to the renegotiation of joint ventures is presently being considered by the board."

A.G.C. Makes Recommendations

In conferences with the Renegotiation Board, the A.G.C. had made

Some A.G.C. Recommendations Adopted by Renegotiation Board

- Joint Venture Proposal Under Consideration
- Expect Elaboration on Applying Risk Factor

five principal recommendations, which were subsequently included in a resolution adopted by the convention.

These recommendations were that construction contracts should be exempt from renegotiation: for types of work regularly carried out by the government which are not directly and immediately connected with defense, for overseas projects, and for projects awarded as the result of competitive bidding after public advertisement.

It also recommended that contractors have the option of being renegotiated on an over-all or completed contract basis, and that any of the partners in a joint venture be permitted to offset losses they might have on other renegotiable business against profits which might be made by the joint venture.

As reported by Chairman Koehler, part of these recommendations were adopted in the regulations. The board has been seeking a man with wide construction experience and detailed knowledge of the industry who could assist them in giving further study to industry problems.

Factor of Risk Considered

While the board has not yet exempted construction contracts awarded as a result of competitive bidding after public advertisement, in section 1460.12 it has set forth the considerations it will give to the risks involved by the contractor in carrying out his work. It is expected that in the future the board may write further on the application of this section to construction contracts.

Actual renegotiation proceedings will be conducted by regional offices which have been or are being established in Boston, New York, Washington, Detroit, Chicago and Los Angeles.

Territories assigned to the offices are:

Boston: Maine, Vermont, New Hampshire, Massachusetts, Connecticut and Rhode Island.

Detroit: Ohio and Michigan.

New York: New York state.

Washington: Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Kentucky and Tennessee.

Chicago: Illinois, Indiana, Wisconsin, Missouri, Iowa, Minnesota, Nebraska, North Dakota, South Dakota, Kansas, Arkansas, Oklahoma, Texas, Mississippi and Louisiana.

Los Angeles: California, Nevada, Utah, Arizona, Washington, Oregon, Idaho, Montana, Wyoming, Colorado and New Mexico.

Instructions for the guidance of the regional offices on renegotiation procedures are now being drafted and distributed by the board.

Handbook to be Published

Early in May there is expected to be published a Renegotiation Handbook, which will contain all of the regulations issued by the board so far and a service to keep the book current for a year, which can be secured from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Price is expected to be \$1.50.

Reclamation Specifications

Four points will be discussed with Bureau of Reclamation officials at a meeting early in May in Denver of a task unit of the Contract Forms and Specifications Committee of The Associated General Contractors of America.

Subjects expected to be discussed include more uniform inspection in the field; the furnishing of detailed cost data on selected jobs; speeding up final payments; and the desirability of stating a specific number of gallons per minute per size for tests on pipeline leakage.

A.G.C. representatives were to meet in Chicago late in April with Committee 20 of the American Railway Engineering Association to consider possible revision of AREA construction contract and bond forms.

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Interesting Statistics on U-Shaped Cofferdam

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» AN official release from a U. S. Army unit in Korea follows, in part: "WITH THE 32nd ENGINEER CONSTRUCTION GROUP, EIGHTH ARMY, KOREA—Across the treacherous Han River somewhere in Korea, the 1st Platoon, Baker Company, 439th Engineer Construction Battalion, 32nd Engineer Construction Group, successfully launched the world's longest continuous steel girder; 36 in. deep, 853 ft. long, and weighing 375 tons. After working arduously day and night, all members of the platoon assigned to the project were jubilant and understandably proud when the girder reached the far bank . . .

"Continuous launching of this exceptionally long and heavy steel girder over a system of multiple rollers from the right bank of the river was conceived by Col. F. S. Tandy, San Francisco, commanding the 32nd Engineers. He directed that this procedure be followed after consultation with Lt. Col. M. Claire Miller of McPherson, Kan., commanding the 439th Engineers, to avoid the long distance movement over tortuous and steep mountain passes of large crawler cranes which would have to work in the river bottom under hazards of imminent floods.

Multiple Rollers Used

"The use of multiple roller systems for launching long girders is not a new one with Col. Tandy (who used a comparable system in France to launch a long, single-span Bailey bridge), nor to Col. Miller, who has worked with Col. Tandy for 14 months in Korea, and who will be remembered as the officer-in-charge of the difficult reconstruction of the high-level railway bridge at Kilra Chon, Korea, which was completed in record time in April 1951 during the Chinese spring offensive. In the reconstruction of the Kilra Chon Bridge, Cols. Miller and Tandy successfully launched over 103-ft. high towers the then world's longest continuous girder, 270 ft. in length and weighing 133 tons, which was fabricated from 48-in., built-up steel I-beams.

"Special steel rollers designed by Col. Ralph A. Lincoln, Engineer Section, Japan Logistical Command, which were first used on the Kilra Chon bridge, were placed upon elements of an unfinished concrete arch bridge whose 40-ft. piers and abutments had been constructed by the Japanese prior to World War II. Although these elements had been sub-

A.G.C. Affiliated Unit Repeats History-Making Feats in Korea

• Launches World's Longest Continuous Steel Girder

jected to artillery fire, they were found usable when repaired. As it was fabricated adjacent to the right abutment, the girder was moved forward over these rollers by means of a Hyster winch mounted on a D-7 Caterpillar tractor located adjacent to the left abutment of the bridge.

"To facilitate the assembly of the girder, Col. Tandy directed that commercial type roller conveyors such as are employed for loading and unloading packaged and other items be placed upon a suitable launching platform. Col. Miller perfected this idea by constructing a concrete launching platform, placing the roller conveyors in parallel lines thereon and by designing timber skids upon which the I-beam sections of the girder were placed. As a result, the girder was fabricated very rapidly with the minimum of personnel and equipment, and the completed sections of the girder were moved forward easily over the steel rollers on the right abutment and successive piers as it increased in length.

"The continuous 853-ft. girder was constructed from pairs of standard built-up, 36-in. steel I-beams, each 23 ft. long, which were placed upon skids rolling on the parallel conveyor systems mounted on the launching plat-

form and then welded together by steel angle bracing. When the bracing was in place, the successive pairs of I-beams were bolted together with 262 bolts for each I-beam connection. The total assembly of the 75 36-in. I-beams forming the girder required 19,388 7/8-in. bolts.

"Now that the launching of this unusual girder has been completed, the rollers will be removed, the girder jacked down onto the bridge caps, and then cut by acetylene torch into 5 separate girders to allow for expansion. The fabrication and launching of an identical girder will be undertaken immediately. Together with the laminated timber decking, the two girders will serve finally as the superstructure for a modern, two-way highway bridge.

Getting Used to Tough Jobs

"When interviewed after the successful launching of the girder, . . . Col. Miller, one of the outstanding engineer officers in Korea, said, 'After Kilra Chon, it was a breeze.'

"Col. Tandy stated: 'This unprecedented launching of a prefabricated, bolt-connected, steel girder 853 ft. long is not likely to be duplicated soon, since, in normal civil engineering procedure, girders are generally designed specifically for each particular bridge and span. I consider this unusual feat of military engineering an additional tribute to the hard-working, courageous and skilled engineer soldiers and officers who under my command have reconstructed 34 large railroad bridges, and have constructed or reconstructed over 100 highway bridges since our arrival in Korea in February 1951.'

The release gave particular praise to direction of work on the project by 1st Lt. Orville S. Beard, Houston, in charge of the work; M/Sgt. Carl O. Hightower, Hays, Kan., launching; Sgt. 1st Class Rollin E. Gibson, Beatrice, Neb., welding; Sgt. 1st Class Donald E. Crowe, Hutchinson, Kan., material deliveries; Maj. John W. Roach, Jr., Vicksburg, Miss., and Capt. John W. Park, Port Arthur, Tex., who designed the elements of the bridge superstructure.

This official account of the latest accomplishment of the 439th Engineer Construction Battalion was sent to THE CONSTRUCTOR by Maj. Albert E. Donnelly, public information officer of the 32nd Engineer Construction Group, to which the 439th is attached.

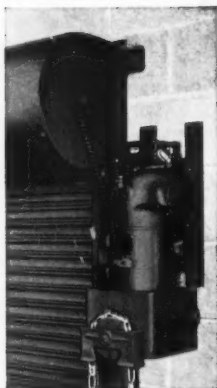
Prior to his call to active duty, Col. Miller, commanding officer of the 439th, was a national A.G.C. director, vice chairman of the A.G.C.'s Highway Contractors' Division, and president of the Kansas Contractors Association, A.G.C., which sponsored the 439th battalion in the Army Affiliation Program. His firm is the San-Ore Construction Co., McPherson, Kan.

The story of the unit's bridge feat at Kilra Chon was told in the July 1951 CONSTRUCTOR.

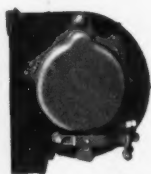
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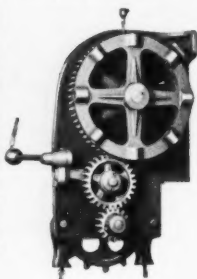
In warehouses and other buildings with high ceiling clearance where maximum usable floor area is the prime consideration, Rolling Steel Doors occupy a minimum of space . . . their vertical roll-up action occupies no usable space inside or outside the opening, or above the lintel level. No other type of door offers such space economy. In the particular installation below, Mahon Underwriters' Labeled, Automatic Closing Rolling Steel Doors were employed in openings in a dividing wall between an inclosed loading dock and the warehouse proper. In case of fire, any doors in the open position will close automatically. Rolling Steel Doors are permanent—their all-metal construction assures you maximum protection and a lifetime of trouble-free service. Whether you buy standard doors or Underwriters' Labeled type for fire protection, you will find that you get a greater dollar value in Mahon Rolling Steel Doors . . . a study of Mahon Specifications covering materials, application of protective coating, operating mechanisms, and other extra-value items, will convince you. See Sweet's Files for complete information—including Specifications, or write for Catalog No. G-52.



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POWER OPERATOR 920-P



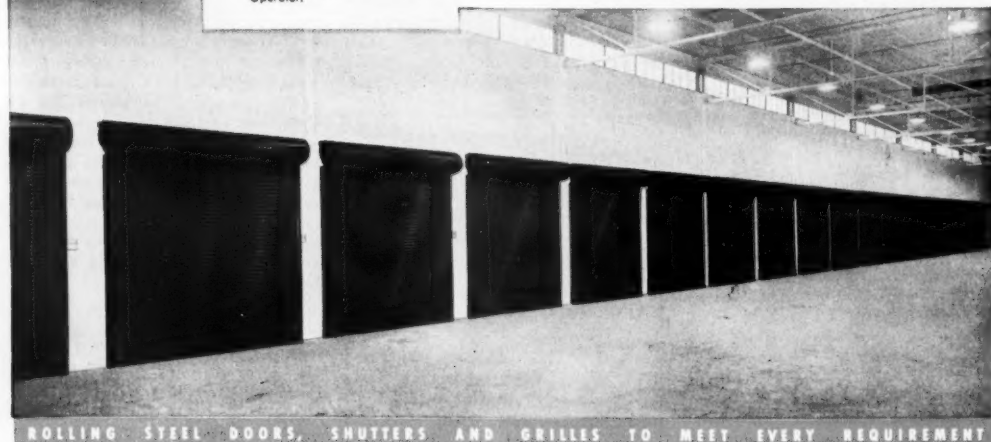
Mahon Release Device and Governor on the Automatic Closing Mechanism of a Mahon Rolling Steel Fire Door. Fusible links release the mechanism in case of fire and the door closes automatically.



Mahon Release Device for Chain-Gear Operator on Mahon Mechanically Operated Rolling Steel Fire Doors. Fusing of the Fusible Link, which releases the Automatic Closing Mechanism, simultaneously disengages the Chain-Gear Operator.

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Twenty-four Mahon Automatic Underwriters' Labeled Doors installed in a new Warehouse for Food Warehouses, Inc., Detroit, Mich. Two Mahon Power Operated Rolling Steel Doors 17'-0" x 22'-0" are installed in railroad openings in this same building. Louis G. Redstone, Architect, Campbell Construction Company, General Contractors.

MAHON

» NATURE PLAYED tricks on the 961st Engineer Construction Battalion during its recent 15-day training period at Fort Leonard Wood, Mo.

As most of the officers and men of the unit are actively engaged in construction in the Milwaukee area, the group was scheduled to go into training in November rather than in July when construction in Wisconsin is in full swing. This change in plans brought them to the Missouri base in the midst of a raging snowstorm which left them snowbound.

Despite this misfortune, the unit, sponsored by the Milwaukee Chapter, A.G.C., carried out an ambitious program. Training included construction of Bailey and fixed-type bridges and cantonments and instruction in firing small arms, demolition, detecting mines and booby traps, building military roads and using tools and equipment the Army way.

In conjunction with the scheduled training, veterans of the last war were given every opportunity to sharpen up their military occupational specialties (MOS) and to learn any new twists that had been added to what was, to them, an old routine. As most of the unit is composed of veterans, little time was spent on basic training.

Some discovered that they had become rather rusty in night group work. During a night problem, five members of the unit lost their way in Ozark hills. The full battalion complement was organized into search parties



Experienced construction men of the 961st erect a floating Bailey bridge in snow-covered terrain at Fort Leonard Wood, Mo. The job was done in record time by the Wisconsin construction men who compose the unit and find cold weather and snow a familiar opponent.

Milwaukee's 391st Trained in Missouri

which, after two hours of forest combing, brought the strays back to camp.

Aside from its heavy training schedule, the 961st found time to lend a hand in the construction of a Butler hangar. The men loaded and mixed concrete and leveled the subgrade of the hangar floor slab in time to beat the onrushing cold weather.

Officers and men of the unit, in looking back on the brief training period, agreed that it had been a most successful undertaking.

Battalion officers are Major Chris Launder, Jr., commanding officer; Major David Webb, executive officer, and Captain VerDayne John, operations officer.

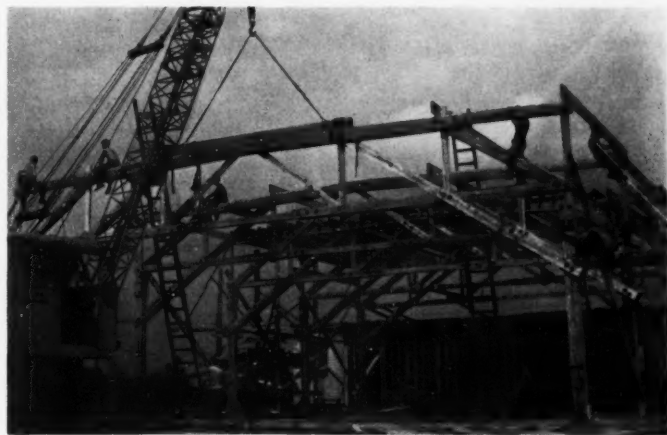
» THE only reserve construction unit in Europe, the 432nd Engineer Construction Battalion, is assisting German architects, engineers and contractors in the construction of a \$5 million, 1,000-bed hospital.

Battalion Commander Maj. Felix A. Davis, formerly a general contractor in Houston, Tex., states that the unit will act as project engineers and also do all the dirt and grade work on the rehabilitation project.

Activated in Sept., 1950, the battalion entered its final phase of training at Fort Meade, Md., where it constructed parking areas on the post, did extensive rehabilitation work on the post firing ranges, rehabilitated a service club and engaged in other training which qualified it to build airfields, highways and railroads.

Altogether the battalion has trained 1,035 men for a minimum of 14 weeks. The unit was sponsored by the Houston Chapter, A.G.C.

Affiliated Unit Engineering German Hospital



432nd shown constructing a service club during its stay at Fort Meade, Md.

Chattanooga Engineer Unit Heads for Camp

» ON INACTIVE duty for three and a half years, the 832nd Engineer Aviation Battalion, sponsored by the Chattanooga Chapter, A.G.C., went on active duty Mar. 1, and on Mar. 7 departed for Fort Leonard Wood, Mo.

According to Lt. Col. Earl C. Smith, commander of the battalion, the unit reported for duty with only two-thirds of its officers and just enough men to form a good cadre. Additional men will be assigned to the group,

bringing it to a full strength of 995.

Speaking during activation ceremonies, Mark K. Wilson, Chattanooga building contractor and member of the A.G.C. chapter, stated that out of the 76 reserve construction battalions set up under the A.G.C.'s affiliated unit program, 21 had been called to active duty and two have served in the Korean campaign.

"These units have practical know-how," he asserted. "They show in-

genuity and often have to perform the impossible."

Other speakers included Mayor P. R. Ogliati, Charles Jones, Chattanooga Military Manpower Commission, and Colonel Creed Bates, chairman of the Army Advisory Committee.



Colonel Earl L. Scott, senior organized reserve instructor, leads Chattanooga construction men of the 832nd Engineer Aviation Battalion in the oath of allegiance, formally ushering the group into active duty.



Chattanooga News-Free Press

Chattanooga's Mayor Ogliati bids farewell to Lt. Col. Smith, commander of the 832nd, on eve of departure.

Another Construction Unit Starts Training

» THE 820th Engineer Aviation Battalion, sponsored by the Northern California Chapter, A.G.C., has been called to active duty and is now in training at Fort Huachuca, Ariz.

Composed of 21 officers and 40 enlisted men, the construction unit is shown below as it departed March 6,

to begin the first leg of its training.

At the extreme left in the front row is Lt. Col. Donald Morgan, commanding officer of the battalion, and next to him is his executive officer, Maj. Robert J. Spiegel. Winfield H. Arata, manager of the Northern California Chapter, is the man in civvies.



364th Ends 3rd Training Phase

The third phase of training was completed recently by the 364th Engineer Construction Group from Kentucky.

The reserve construction unit, sponsored by the Kentucky Highway Division, A.G.C., was activated in 1948 and has since trained at Bowman Field, Ky., Fort Belvoir, Va., and most recently at Camp Pickett, Va.

The unit, composed of 14 officers and 24 men, most of whom are veterans of the last war, underwent routine training during its 15-day stay at Camp Pickett, touching on all phases of field instruction. Training with it was the 981st Engineer Construction Battalion of New Orleans, sponsored by the New Orleans Chapter, A.G.C.

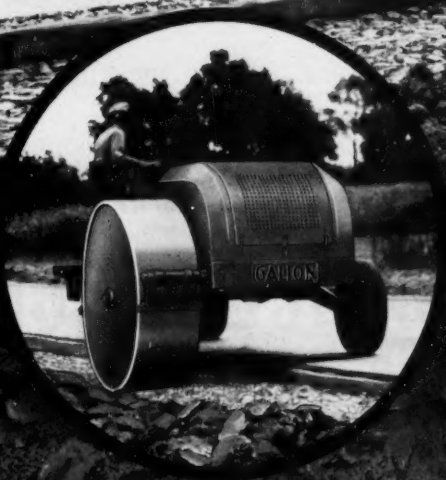
The 364th's commander, Colonel Herman Erhart, is a veteran of 40 years Army service and was with the American Army of Occupation in Korea after world War II. In civilian life, he is head of the Erhart-Knopf Construction Co. of Louisville, Ky.

In regard to training policy, Colonel Erhart stated, "The reason we are taking our reserve training at this time instead of in the summer stems from the fact that almost all our personnel are contracting engineers, many of whom will be on vital government contracts three to four months from now."

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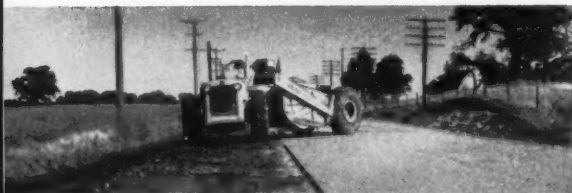
P. W. RYAN SONS SAYS:



“There’s a place for the ‘D’ on every big production job”

Superintendent Tom Ryan, speaking for his firm, one of Wisconsin’s largest contractors, continues, “Our 7-yd. Tournapull is a good finishing tool . . . fine for trimming cuts . . . cutting 3-to-1 and 4-to-1 backslopes . . . just the right width for ditching. It works just about anywhere. It doesn’t need a push to get a good load . . . it’s fast on long hauls and in traveling from job-to-job.”

The Ryan company, veterans of 40 years in the dirt-moving business, move most of their scraper dirt with a fleet of 7 Super C Tournapulls and 6 tractor-drawn W Carryalls. Their 122 h.p. D Tournapull, usually used as a self-loading tool, does a large share of the fine-detailed finishing work on the company’s big jobs . . . also handles small municipal contracts between major assignments.





"DOESN'T NEED A PUSH" Placing earthfill on U. S. 14 near Walworth, "D" had to haul through open traffic estimated by State Engineer at 5,000 cars daily. Self-loading wet loam and gravel, it made 12 trips per 30-min. hour over 800' cycles. On backsloping and finish-grading, Superintendent Tom Ryan estimates the "D" averages 100 self-loaded trips per 10-hour day.



"VERY FAST FROM JOB-TO-JOB" D Tournapull's light weight (22,450 lbs. empty), narrow width, and low-pressure tires allow roading the rig anywhere. It crosses railroad tracks, bridges, drives through heavy city and country traffic safely at speeds up to 28 m.p.h. . . . has averaged around 20 m.p.h. on 5 job-to-job moves to date.

Works on 5 jobs in 4 months

First task for the electric-control "D" last season, for example, was as a clean-up rig on a 150,000-yd. county road near Verona. From here, it was driven 37 miles to stockpile topsoil and help grade 100,000 yds. on the Monroe-Monticello Hwy. That work completed, the "D" drove 66 miles (in 3½ hours) and, teamed with a second "D" on rental from Rockford Construction Co., moved 11,000 yds. to widen 10 miles of Hwy. 14 near Walworth. Next, Ryan's Tournapull, working alone, regraded 4 Janesville city streets, self-loading 4,000 yds. in 2 weeks. The versatile rig is now in Black River Falls, 190 miles north of Janesville, on its 5th job — finishing for a 400,000-yd. highway relocation. In all, Ryan's handy Tournapull worked 700 hours during this typical 4-month period, drove 330 miles job-to-job . . . overall, was 95% mechanically efficient.

William H. Ryan, partner in the Janesville company, says, "The 'D' by no means replaces larger units, but in a great many places it does much better than the big units. We're constantly finding new uses for it. It's just like a pair of pliers . . . does a lot of small but very necessary operations efficiently. It has a place on every job."



"EASY TO HANDLE IN TIGHT SPOTS" "No rig that I've run has been so easy to handle," says Bob Ritchey, Tournapull operator. "You can't beat 'em on long hauls. They're nice on the highway, easy to get in and out of tight places, easy to work on a 3-to-1 backslope, have plenty of power." Rig is shown, above, grading parkway in Janesville; below, turning on highway after grading shoulder.



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» **MAJOR ACTIONS** of the Construction Industry Stabilization Commission which administers the government's Wage Stabilization Board policies in the construction industry, last month were announcement of:

1. A policy resolution stating in detail the commission's 1952 wage policy which permits wage increases not in excess of 15¢ per hour, in addition to the 10% increase permissible under the 1951 policy.

2. Regulation No. 2 which gives the details on how CISC will administer its policy of permitting employer contributions of 7.5¢ per hour to approved health and welfare funds.

General contractor representatives of CISC had sharply dissented from the health and welfare policy, but were outvoted (April CONSTRUCTOR, page 48). The Associated General Contractors of America at its 33rd annual convention adopted a resolution expressing "vigorous opposition to actions by any federal agency which help to promote the establishment of health and welfare funds in construction through the exercise of powers intended only for the purpose of wage stabilization."

Wage Rates

In its policy resolution, CISC stated that it would be guided by the following policies on wage rates:

"1. In accordance with the policy announced September 1, 1951, the commission will continue to approve increases in area rates raising such rates to not more than 10% above the hourly rate for the same job classification in the same area on June 24 (and in some cases July 1) 1950.

"2. The commission will also approve additional increases of not more than 15¢ per hour in excess of the rate approvable under the 10% formula, unless it is clearly established that the increase will be seriously destabilizing. For example, if the wage rate of June 24, 1950 was \$2.00 per hour, the '10% formula' allowed an increase of 20¢ per hour, or a rate of \$2.20. The new formula, which allows an additional 15¢ per hour, would permit approval of a rate of \$2.35.

"3. The commission will continue to act on other applications for wage rate increases on a case by case basis in the same manner as heretofore. The commission may allow additional increases when necessary to correct inequities, subject to the approval of the Wage Stabilization Board."

CISC Details '52 Wage Policy, Issues Rules on Welfare Fund

- "Policy Resolution" Elaborates on 1952 Rates
- Regulation Outlines Health and Welfare Plan
- Wage Formula to Govern Other Fringe Benefits

Fringe Benefits

The details of administration of the health and welfare fund policy is set forth in Regulation No. 2.

In the wage policy resolution, the commission stated it "will approve payments towards pension funds, annuities, vacation plans, paid holidays and the like" only within the limitations of the wage formula, and payments for such purposes will be classified as wage increases.

Retroactivity

Whenever both parties clearly request retroactivity of a wage increase under the "10% formula," the commission stated that it would approve retroactivity "to any date specified by the parties not earlier than the expiration or reopening of their last collective bargaining agreement."

Under the "15¢ formula" where both parties have clearly requested it, the commission stated it will approve "back to any date after February 1, 1952 specified by the parties but not earlier than the expiration or reopening of their last collective bargaining agreement."

The 1952 wage policy "will govern the commission until December 31, 1952 unless wage and price controls are removed or there is a major new development in WSB policies applicable to industry generally other than the allowance of a productivity or improvement factor."

Health and Welfare Funds

Section 2 of CISC Regulation 2 sets forth the general standard for approval of health and welfare funds as follows:

Sec. 2. General standard of approval—(a) *Approval of plans.* In the absence of extraordinary circumstances clearly demonstrating the danger of inflationary consequences, the commission, upon an application filed under section 4, will approve employer contributions to a health and welfare plan in an amount not exceeding 7.5 cents an hour for each hour worked by his employees in the

job classifications covered by the plan, provided—

(1) That the coverage of the plan is limited to employees, retired employees, their spouses and dependent children under 19, and

(2) That the benefits payable are limited to one or more of the following:

(i) *Temporary disability.* A cash benefit which indemnifies an employee for wage loss while disabled by any injury or illness not compensable under any statute providing compensation for occupational injury or illness. The benefit may be paid whether or not the employee is hospitalized, and may continue during the period of disability up to a specific maximum duration. In addition, a cash benefit may be paid for injuries or illnesses which are compensable under a statute providing compensation for such injuries or illnesses which will supplement the amount payable under such statute in an amount sufficient to bring the total payment to the employee up to the level provided in the employer's temporary disability plan. The rate of indemnity may be stated either as a flat amount per employee per time period or the amount may be graduated according to the employee's earnings. Paid sick leave, for purposes of this regulation, is not to be considered as a temporary disability benefit.

(ii) *Hospital expense.* Partial or complete payment for any injury or illness not compensable under any statute providing compensation for occupational injury or illness, for (1) hospital room and board charges, for other than private accommodations, and (2) for other hospital costs, typically called "extras" or "miscellaneous charges", e.g., laboratory and X-ray examinations, drugs, and medicines, use of operating rooms. The plan may partially or fully indemnify the patient for costs actually incurred, with payment either to the patient or to the hospital facility rendering the service.

(iii) *Surgical expense.* (a) Partial or complete payment for surgical expenses for any injury or illness, including surgical care in obstetrical cases, not compensable under any statute providing compensation for occupational injury illness.

(b) The plan may partially or fully indemnify the patient for costs actually incurred, with payment either to the person or organi-

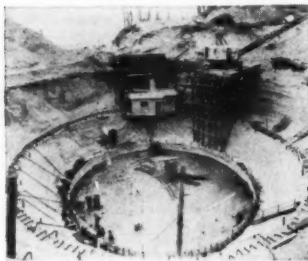
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LABOR RELATIONS

zation rendering the surgical service, or to the patient himself.

(iv) *Medical expense.* Partial or complete payment of medical charges for any injury or illness, other than those covered by surgical or hospital expense benefits, not compensable under any statute providing compensation for occupational injury or illness. The plan may partially or fully indemnify the patient for costs actually incurred, with payment either to the person or organization rendering the medical service, or to the patient himself.

(v) *Group life insurance and accidental death and dismemberment benefits.* Death benefits provided on a group term or equivalent basis which provide no cash surrender, paid-up or non-forfeitable loan values; accidental death and dismemberment benefits, i.e., benefits for accidental loss of life, sight, or limbs; permanent and total disability benefits not in excess of the face value of the policy.

(b) *Approval of agreements to establish plans.* If the parties desire to provide for payments into health and welfare funds prior to the establishment of a plan, the commission, upon application under section 4, will normally approve employer contributions in an amount not exceeding 7.5 cents per hour for each hour worked by his employees in job classifications to be covered by the plan if,

but only if, the contributions are payable to a depository or trustees under a written agreement stipulating—

(1) That the fund will be used only to provide health and welfare benefits of the character defined in paragraph (a) (2) (i) to (u) inclusive;

(2) That no part of such fund may revert to the employer;

(3) That no part of such fund will be paid to a labor organization or employees except in the form of the aforesaid health and welfare benefits;

(4) That a plan will be established and the payment of benefits will commence within twelve months from the start of contributions unless, upon application, the time is extended by the Construction Industry Stabilization Commission.

(5) That in the event the parties are unable to agree on any question concerning the health and welfare plan to be established, the issue will be submitted to final and binding arbitration.

(c) *Contributions in excess of general standard.* The Commission will consider applications for approval of greater employer contributions to health and welfare plans and may approve such contributions upon a showing that the increased contribution is justified by exceptional circumstances.

Lump-Sum Price Sanction Issue Dodged

• WSB Enforcement Commission Halves Penalties in Hedin Case

» IN ITS FIRST major decision, the National Enforcement Commission of the Wage Stabilization Board last month side-stepped the issue of whether it has the legal right to impose sanctions against lump-sum contract prices in cases alleging violation of wage stabilization regulations.

Eliminates Contract Sanction

The commission upheld the decision of its Regional Enforcement Commission in Michigan, finding the J. D. Hedin Construction Co., Washington, D. C., guilty of violating the regulations, but reduced penalties imposed by the regional body from a total of \$80,000 to \$37,783.91. A sanction against the company's contract price was eliminated.

The regional commission had found that the company paid 25¢ per hour in excess of the area rate established for bricklayers in collective bargaining agreements on a \$7 million Veterans Administration hospital at Ann Arbor, Mich. It imposed penalties in the

form of a \$40,000 deduction from the amount the firm may charge to expenses in paying income taxes and a \$40,000 deduction from amounts due the contractor for construction of the project under a lump-sum contract.

In the appeal to the national commission, defense counsel argued that the commission had no legal authority to impose a deduction from a firm's lump-sum price under the Defense Production Act and WSB's enforcement regulation which refer only to the determination of "costs or expenses."

Declines Ruling

In its brief reference to this major issue, the national commission stated in its decision:

"In view of our conclusion that the tax deduction disallowance will constitute an adequate sanction under the circumstances of this particular case, we need not, and do not, pass, at this time, upon the Respondent's contention that the determination of the

LABOR RELATIONS

Regional Commission that the Veterans Administration disallow \$40,000 for the purpose of determining the fixed price under its contract with the Respondent is not authorized by the Defense Production Act of 1950, as amended, and by the regulations issued thereunder."

The \$37,783.91 disallowed for tax purposes represents the wage payments to bricklayers in excess of \$2.75 per hour from Feb. 28, 1951 to July 25, 1951 (the end of the last pay period prior to the effective date of the Construction Industry Stabilization Commission's Regulation No. 1), and one-half of the entire payroll for bricklayers from July 26, 1951, the effective date of CISC No. 1, to Nov. 14, 1951, when the firm reverted to the \$2.75 rate.

Tailored Regulation Tardy

It was with the note that a regulation tailored for the construction industry was not adopted by the WSB until July 26, 1951, that the commission modified the regional decision so as to penalize the firm only for the actual amount of illegal payments between the time it instituted them in February until promulgation of the regulation. After that date a sanction of 50% of the bricklayers' payroll was imposed.

The commission said it could have disallowed \$116,131.50 under stabilization rules and regulations.

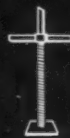
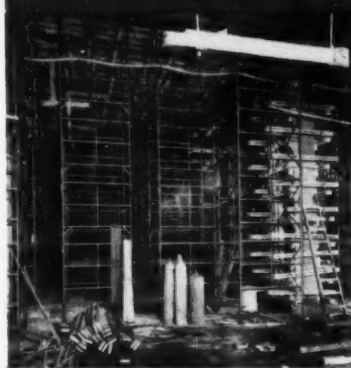
Recognizes Difficulties

While asserting that the Hedin firm was in error in principle, the commission took cognizance of "pressures brought upon the Respondent to complete the hospital" by the VA, whose contract provided for a penalty of \$250 per day for delay beyond the specified completion date; the cooperation of the firm in reducing its rate at the request of enforcement officers and in the inspection of its records; the fact that the CISC ultimately approved the \$3 area rate for the locality, thus limiting the "inflationary effect" of the increased rate; the "general confusion" concerning administration of the stabilization program in February 1951, when it had not reached the stage where ready action could be given to requests for approval of wage increases; and the fact that, at the time of creation of the CISC, many of the WSB's regulations were "technically unsuitable to the building and construction industry."

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FACTORY SERVICE BRANCHES IN 20 PRINCIPAL CITIES



» FORTY-SEVEN bricklayer apprentices competed in Michigan's First Annual Bricklayers' Apprentice Championship. So did the governor, and the mayor of Lansing.

The contest, held in April in Lansing, was sponsored by the Lansing Junior Chamber of Commerce and the Lansing Junior Builders and Traders Exchange for the purpose of showing the public the vocational education being offered brickmasons and the effort being put forth to improve the standards of masonry in the state.

Both for fun and for highlighting the importance of apprentice training programs, Governor G. Mennen Williams ran a mock bricklaying contest with Lansing's Mayor Ralph Crego to demonstrate by their lack of it, the skill necessary in bricklaying.



Henry A. Reniger, of Michigan Chapter, A.G.C., presents \$200 to Thomas Apeczynski, tops in the contest for the two-year class.



Joe Hicks, president, State Conference of B.M.P.I.U., presents \$200 check to Edward Dewitt, contest champion in the one-year class.

Michigan Holds Apprenticeship Contest

• Winners to Enter National Competition; Governor Tries Hand

Cooperating in the presentation of the contest were the Michigan Conference, Bricklayers, Masons and Plasterers International Union; the Michigan Chapter, A.G.C.; the Structural Clay Products Institute; Michigan's Board of Control for Vocational Education, and the U. S. Bureau of Apprenticeship. It is these groups which combine to form the local Joint Apprenticeship Committees which direct the apprentice training programs.

Formal schooling is provided one day each week by travelling instructors employed by the State Board of Control for Vocational Education. The U. S. Bureau of Apprenticeship pro-

vides some of the funds and certifies brickmasons upon the completion of their apprenticeship.

Winners of the contest were picked from two classes on the basis of correct design, neatness, plumb, level, uniform joints and ability to use tools. Thomas Apeczynski, Detroit, took first place in the two-year division and Edward Dewitt, Holland, placed first in the one-year division. They were each given \$200, a gold trowel, and a trip to Boston in May where they will represent the state in the National Brickmason Apprentice Contest.

Second and third place winners received \$150 and \$100 respectively.



Above: View of contest arena in Lansing Boys Vocational Field House.

Below: Representing groups promoting the contest were, left to right—Joe Hicks, president, Michigan State Conference of B.M.P.I.U.; Sam Stovel, U. S. Bureau of Apprenticeship; Andrew Virtue, apprenticeship coordinator, Department of Vocational Education; John Lodge, secretary, Conference of B.M.P.I.U.; Henry A. Reniger, chairman, Michigan A.G.C. Chapter's Apprenticeship Committee; Frank Sanders, Structural Institute; Henry A. Reniger, Jr., president, Junior Builders' and Traders' Exchange, Lansing; William Kutchev, president, Lansing Junior Chamber of Commerce; William Roark, S.C.P.I. masonry apprentice training director; and George W. Combs, secretary-manager of the Michigan Chapter, A.G.C.



✓	Original schedule	400 tons per hour
✓	Daily average maintained	600 tons per hour
✓	Peak day production average	724 tons per hour

"That's why Double



The Inside Story OF DOUBLE IMPELLER IMPACT BREAKER PRODUCTION



Approximately 50% less contact of stone on metal, because such a high percentage of material is broken in suspension.

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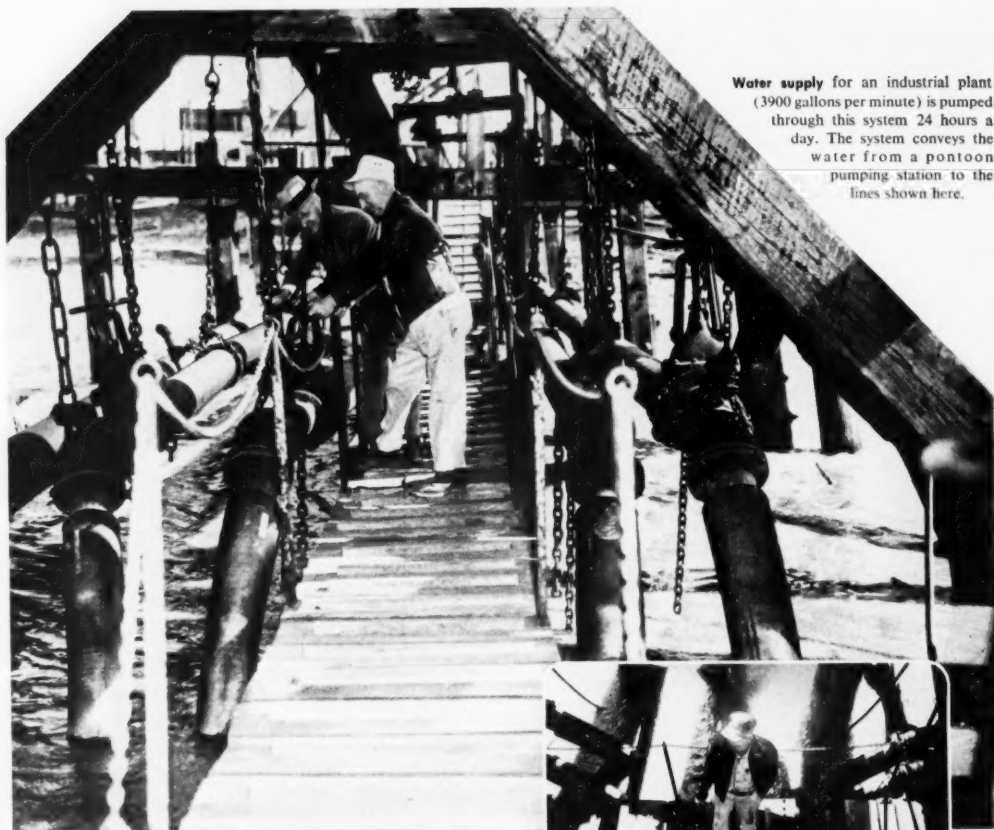
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"Disaster Street"—FCDA Candidate for World's Most Unusual Construction Job

AN A.G.C. contractor recently began a job that, when completed, will undoubtedly fail most sound-construction laws calculated to make buildings safe for occupancy.

Walls will appear on the verge of collapsing; roofs will sag; ruptured pipes will leak gas; broken mains will spout water; and bare wiring will shock careless occupants who must enter through crumbling doorways, past heaps of rubble, dirt and broken concrete. When the job is finished it will look as though an atom bomb had been dropped down the middle of Main Street.

This is precisely what the Federal Civil Defense Administration wants. The project, first of its kind ever to be constructed, will be an outdoor "classroom," dubbed "disaster street," which civil defense officials will use to conduct advanced rescue training work programs at the agency's staff college at Olney, Md.

Cost-Plus Contract

The general contractor, Joseph B. Bahen Construction Co., Inc., Washington, D. C., is building the "street" on a cost-plus-a-fixed-fee contract for the rescue service division of the FCDA. There will be 5 buildings in all representing typical structures found in most American cities. Each will present a specific problem to rescue trainees taking advanced courses in similar problems that faced workers in Hiroshima, Coventry and Berlin after World War II air raids. Though the external features of the buildings will be badly damaged, the frames and skeleton structures must be built according to rigid principles of stress, weight and the use of tested materials.

The disaster scene will include a two-story wood frame house with basement; a two-story row house with basement; a two-story office, store and theatre building combination; a three-story office and apartment building with basement; a five-story reinforced concrete building and an outdoor demonstration area for advanced training in the use of rescue tools.

The frame and row houses, among the commonest types found in this country today, will provide instruction in tunneling through earth and debris, plus working with collapsed roofs, walls and the other hazards concerned with rescue work. Water will pour

out of broken mains, flooding portions of the rescue area. A harmless gas will leak from ruptured pipes and saturate other areas. Even so, the rescuers will don gas masks and work their way to the asphyxiated "victims."

In constructing the three-story office and apartment building, the Bahen company will first have to erect the skeleton of structural steel and then, by heating, bend the beams into distorted shapes and forms to simulate actual bomb damage.

In the case of the office-store-theatre type of building, the theoretical danger will come from the possible collapse of walls and roof trapping the occupants inside. The construction problem here will be to make the building safe but yet have the appearance of near collapse. This building is typical of our schools, meeting halls, bowling alleys and gymnasiums. There will also be a driveway in the rear, providing a "rear alley" situation with its own peculiar rescue problems.

The five-story reinforced concrete structure will typify most large business, institutional and public buildings today. This category includes offices, banks, hospitals and schools. The columns, beams, floor slabs and roof will be made of reinforced concrete. Its height will complicate rescue problems, for the rubble will accumulate as it falls through the destroyed floor sections. Special equipment, such as mobile cranes and booms, will have to be used for lowering "casualties."

(Continued on next page.)

Models of 3 "Disaster Street" buildings: Top, reinforced concrete office building, hotel or hospital type; center, structural steel and masonry apartment or office building type; bottom, typical row house, with basement.



Present City Bomb Shelters Inadequate

• Can Only Protect Limited Number, Survey Shows

» THE A-BOMB shelter program of the Federal Civil Defense Administration calls for altering existing buildings in potential target cities to provide protection for 15 million additional people, since the cities can now safely shelter only 2 million persons during the working day.

These estimates are based on a sample survey by the Bureau of the Census, working with a panel of technicians including a representative each from the A.G.C., the Atomic Energy Commission, the American Society of Civil Engineers, the American Concrete Institute, the American Institute of Steel Construction and the American Institute of Architects. The panel evaluated shelter criteria established by the Lehigh University Institute of Research for the FCDA.

Surveys of the major cities are being conducted by teams of volunteer architects, construction engineers, builders, municipal building inspectors and utility experts. Civil Defense authorities, in the announcement, recom-

mended a block-by-block survey because they believe there will be sufficient attack warning to permit persons in a given area to reach shelters in the block, but not time enough to reach points more distant.

At present, surveys have been completed in two cities and are underway in 39 others. Philadelphia has partially completed its survey of shelter potential in 140 blocks making up the downtown area. The local office of civil defense with volunteer engineers has covered over $\frac{1}{3}$ of the area.

Two Surveys Completed

Two smaller cities, Hartford, Conn., and Reading, Penn., have completed their shelter surveys. The Hartford survey, made under the supervision of the city engineering department, found that only 16% of its population could be adequately sheltered within existing buildings. Another 28% could be sheltered within altered buildings and 56% would require new shelters to protect them. The city of Reading, in its survey, found that it could provide shelter for only a small percentage of its population, too.

The FCDA now has allocations of steel, copper, and aluminum to support construction of a wide variety of civil defense construction projects. Included are many types of shelters, control centers, communication towers and other facilities. Since materials may now be allotted directly by the FCDA, red tape is cut to a minimum, the agency reports.

Steel Allotments Announced

The Defense Production Administration recently allotted 15,000 tons of carbon steel to be used in the 3rd quarter of this year for such construction. Approximately 8,500 tons have been made available for the 2nd quarter. These amounts include reinforcing bars, structural steel, sheet and steel plate. The FCDA has authority to allocate this material only when it is to be used exclusively for civil defense purposes.

If, for example, a manufacturing plant plans to expand and use a portion of the new space for shelter purposes, FCDA would have no authority to allot materials for the project since it would be of a "mixed" nature and under the

authority of the DPA. If, on the other hand, a plant undertook, as a separate project, construction of an exclusively civil defense project like a shelter within an already existing building, then FCDA could authorize construction and allot materials.

In a recent speech to the A.S.C.E. convention in New Orleans, James T. Martin, deputy administrator, Technical Operations Office of the FCDA, said, "We see the necessity for certain preliminary engineering studies to be made after the results of the surveys are in. This would consist of preliminary planning for the improvements of existing structures and the construction of new structures. We have requested \$6.5 million of matching funds in our 1953 budget now before Congress to defray the federal government's share of these preliminary engineering costs."

"Following this preliminary study would come the preparation of plans and specifications based on the engineering work and then the actual construction work. For this second phase, . . . we have requested \$243 million in our budget, which also is to be used on a matching fund basis."

Caldwell Sums Up Program

Civil Defense Administrator Mildred Caldwell summed up the shelter program when he recently told a press conference at the Las Vegas, Nev., A-bomb test grounds that "We do not know nearly enough about the precise effect of atomic explosions on various types of buildings. What, for example, happens to tall structures so characteristic of our American cities? What happens to curtain walls and interior partitions struck by atomic blasts? What happens to a row house when the walls collapse and heavy debris falls into the cellar where a family may have taken shelter?"

"What modifications would be needed in various types of existing structures to provide reasonable protection? What would be the most economical types of new structures designed to serve as shelters?"

"Such information would be of great help in certifying the safety for shelter purposes of various kinds of buildings in our large cities."

"We have gone ahead on some of these things, using the best engineering knowledge, because we can't afford to wait. Tested information of this kind—and much more—will become available only when we have the funds to pay for the necessary tests."

Disaster Street—Continued

Also, special safeguards must be provided for the rescue crews working simultaneously on the different floors.

In the outdoor demonstration area sections of brick walls and steel beams will be erected for practice in cutting, jacking and lifting concrete beam and slab sections. Other wall sections will provide shoring practice for the trainees. Debris piles, plaster, metal and wood lath plus various types of building furnishings will also be arranged to provide practice in moving and hauling debris.

The government engineer on the job said that constructing a partially destroyed building would cost about the same as building it complete and the routine hazards to personnel in this case would not be any greater than those on a normal job of the same type. However, it will be harder, he asserted, because the factor of sound and safe construction must be adhered to at all times. The frame, which must be as strong as any normally constructed building, will be in a partially destroyed condition and yet afford safe working conditions for rescue trainees. This will be the hardest part of the job, he added.

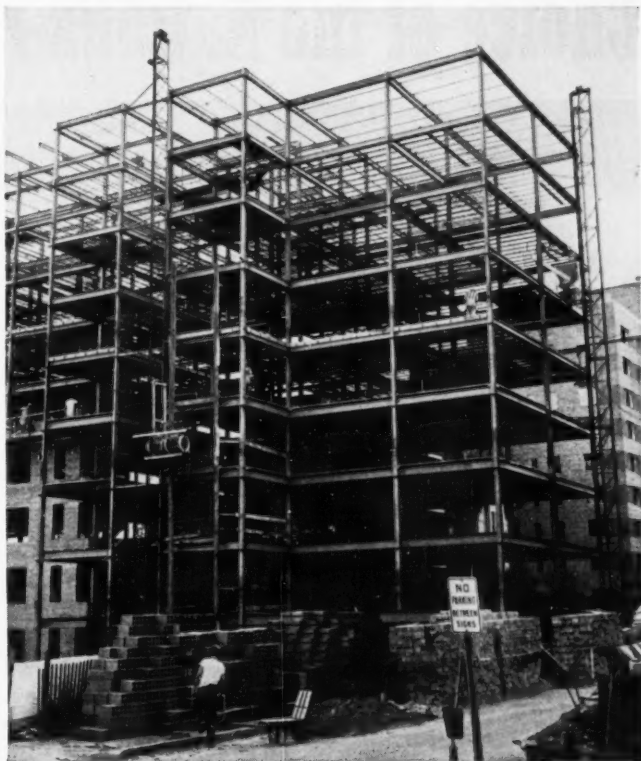
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Sublimity, Oregon
Eugene, Oregon
Lebanon, Oregon
Eugene, Oregon
Carnio, Calif.
Roseburg, Oregon
Libby, Montana
Coquille, Oregon
Quinalt, California
Susanville, California
Oakland, Oregon
Lawton, Illinois
Eugene, Oregon
Sapelo, Washington
Valeport, Oregon
Cle Elum, Washington
Robertsburg, North Carolina
Mapleton, Oregon
Anderson, California
Tillamook, Oregon
Snoqualmie Falls, Washington
Fort Bragg, California
Eugene, Oregon
Spokane, Washington
Fort Bragg, California
Alsea, Oregon
Toulumne, California
Tacoma, Washington
Enumclaw, Washington
Dallas, Oregon
Drain, Oregon

PIPELINE

NAME
Anderson Brothers
Anderson Construction Co.
Associated Pipe Line Corp.
Bechtel Corp.
Bishop and Lock
Briden Contracting Co.
Burton Construction Co., O. R.
Co.

Houston, Texas
Salem, Illinois
Houston, Texas
San Francisco, California
Dallas, Texas
Washington, Pennsylvania
Wichita Falls, Texas

PIPELINE

NAME
Fulton, R. H.
El Paso Natural Gas Co.
Gentry Construction Co., H. L.
Mahoney Contracting Co.
Midwestern Constructors
Morrison Construction Co.
Oklahoma Construction Co.
Price Company, H. C.
Saugh Company, N. A.
Smith Contracting Co.
Smith Contractor Corp.
Texas-Louisiana M. K.

Lubbock, Texas
El Paso, Texas
Jackson, Mich.
Lansing, Michigan
Tulsa, Oklahoma
Austin, Texas
Dallas, Texas
Bartlettville, Ohio
Campbellsville, Kentucky
Fl. Worth, Texas
Altavilla, Virginia
Fl. Worth, Texas

MISCELLANEOUS

NAME
Alaska Road Commission
Baltimore, City of
Bethlehem Steel Co.
Commonwealth Edison Co.
Consumers Power Co.
Dane County Highway Dept.
DuPont, E. I. defumers & Co., Inc.
Duquesne Light Co.
Kehala Sugar Co., Ltd.
Lone Star Steel Co.
Lone Star Steel Co.
Nagasa Mohawk Power Corp.
Northern Indiana Public Service Co.
Public Service Co., No. Illinois
Shelby County Highway Dept.
Tennessee Coal and Iron Co.
Tennessee Valley Authority
U. S. Atomic Energy Commission
U. S. Engineers
W. Virginia State Road Commission

Alaska
Baltimore, Maryland
Bethlehem & Steelton, Pa.
Chicago, Illinois
Jackson, Michigan
Madison, Wisconsin
Wilmington, Delaware
Pittsburgh, Pennsylvania
Kehala, Kasov, T. H.
Lone Star, Texas
Albany, New York
Gary, Indiana
Chicago, Illinois
Shelby County, Wisconsin
Jarrillo, Alabama
Renoville & Chattanooga, Tennessee
Oak Ridge, Tennessee
Tulsa, Oklahoma
Charleston, West Virginia

CANADIAN CONTRACTORS

NAME
Iron Ore Company of Canada, Ltd.
Bell Asbestos Corp.
Fraser Brace Ltd.
Shawcross Power, Ltd.
McFarland Construction Co., Ltd.
Ontario Hydro Electric Commission
Peel Construction Ltd.
Carier Construction Ltd.
Wasson Coal Striping
Sten Peterson
Bird Construction Ltd.
Morrison-Kauffman (Canada) Ltd.
Alaska Pine Ltd.
Bishop and Lock
Aluminum Co. of Canada
Celanese Corp. Ltd., of Canada

Montreal
Asbestos, Quebec
Montreal
Montreal
Picton, Ontario
Toronto
Brampton, Ontario
Toronto, Ontario
Windsor, N. B.
Winnipeg, Manitoba
Regina, Saskatchewan
Vancouver, B. C.
Vancouver, B. C.
Steeleport, Ontario
Montreal, Quebec

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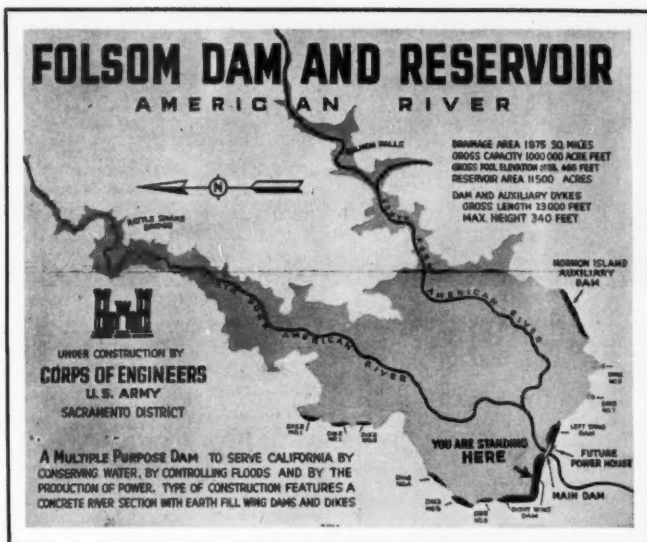


INTERNATIONAL

POWER THAT PAYS

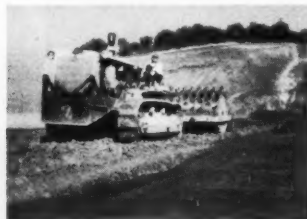
Nature gets a lesson in topography on the Folsom Dam

WHEN plans for damming the American River in California were considered, it became evident that the logical site near Folsom would not be adequate for potential storage if plugged the conventional way. Studying the problem, Army Engineers soon came up with an answer. They proposed a larger dam than the natural topography permits by adding wings to the main dam, plugging saddles between the hills and placing an auxiliary dam through an ancient river channel. The project will serve three purposes—flood control, water conservation and hydroelectric power for California. Gross length of the two dams and saddle dikes of rolled



Above: Loading fill on the double on this 23,000-foot gross length project is this "Caterpillar" team—a No. 12 Motor Grader equipped with DoMor Elevating attachment.

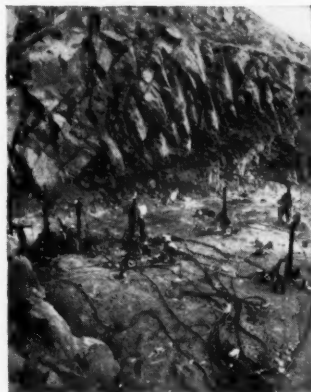
Below: This "Cat" D8 Tractor with sheep-foot tamper works steadily compacting fill. Contractors: D. & H. Construction Co. and M. H. Hasler Construction Co.



earth totals over 23,000 feet—more than four miles.

Helping contractors speed various phases of construction are many "Caterpillar" Diesel Engines, Tractors, Motor Graders and Earth-moving Equipment. As on other projects, the big yellow engines and machines are giving a good account of themselves. Ruggedly built, they stay on the job day after day with a minimum of down-time. And extra hours of operation at lower cost are being added by proper maintenance—a matter of only a few minutes a day per unit. Good service from the nearby "Caterpillar" Dealer also helps step up their record of performance.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS



Drilling shot holes for power house excavation is a phase in which "Caterpillar" equipment is used. Compressed air is supplied by two Gardner-Denver and two Chicago-Pneumatic Compressors, each powered by a D13000 Engine. Contractor: Guy F. Atkinson Co.

First Prestressed Concrete Floor Beams Laid for College

» THE FIRST major elevated floor system in the United States designed in prestressed concrete has been completed at a New York college.

Although the method has been successfully employed now in bridge girders, roof girders, floor slabs, roof slabs, road slabs and reservoirs, this appears to be the first adaptation of the technique to floor girders by an American firm. Particularly important to contractors now is the report by Eggers & Higgins, New York City architectural firm which designed the structure, that the development effected a saving of 64 tons of steel in this case.

The decision to use prestressed concrete girders was made after it became apparent that the necessary allocation of 72 tons of structural steel would not be made available in time to meet the construction schedule. The use of reinforced concrete would have required beams so deep that re-designing would have been necessary.

"The theory of prestressed design is that undesirable stresses in a load-carrying structure can be eliminated by introducing into it artificial stresses which are directly opposed to those to which the structure will be subjected when the load is imposed," the architect explains. "In construction this principle is applied to concrete by drawing high tensile steel wires or bars through concrete beams or winding them around circular concrete shells under such extreme tension that the concrete is always endowed with ample compression to counteract any anticipated tension load."

Six girders have been poured and stressed to support the floor of a new dining room at Manhattanville College of the Sacred Heart, Harrison, N. Y. Each beam is 65 ft. long and 4 ft. deep. They are designed to carry a live load of 100 pounds per sq. ft., a dead load (the weight of the floor deck and flooring) of 122 pounds per sq. ft., and their own weight.

Each girder is prestressed by 22 cables, each consisting

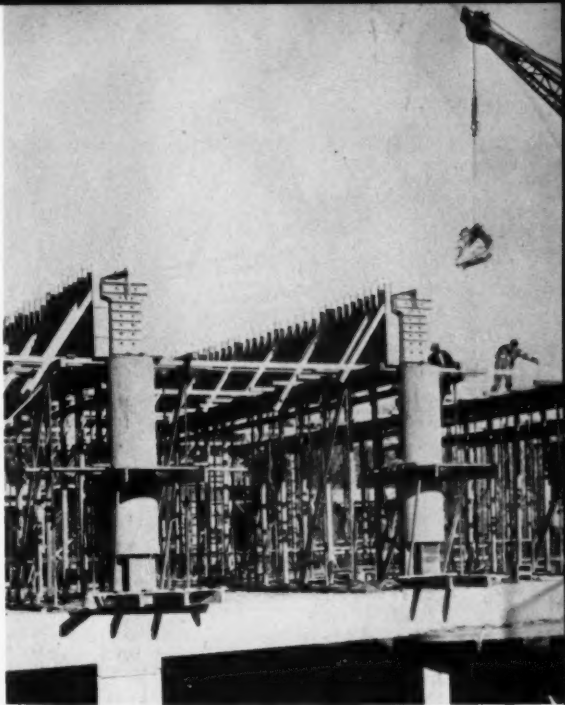


Figure 1—Formwork for two of the concrete girders. At right, one of the precast concrete brackets is being lowered into place. Note the two precast end anchorage blocks already in place.

of 12 high-tensile steel galvanized wires .196 in. in diameter. The pull of the prestressing jack exerted on each cable was 26 tons.

The architects believe this is the first time in this country that girders were poured in place and prestressed in two stages. The initial stage was planned to carry the dead load of the girders themselves and a portion of the applied load of the floor system and the second stage to carry the remainder of the applied load and the live load.



Figure 2—Workmen thread prestress cables into a steel tube sheathing to prevent bonding with concrete.



Figure 3—The steel sheathing containing the stress cables is being pushed through the formwork and positioned before the pouring. Note the precast brackets, also in position.



Figure 4—A closeup of workmen prestressing girder with jack after concrete has set. In this stage, 10 of the 22 cables in each beam were put under 26 tons pull.

In the first stage, 10 cables were stressed in each girder; in the second stage, the remaining 12 were stressed.

The end anchorages, with cavities formed through which the prestressing cables emerge (see Figure 4), were precast. So were the anchor cones and the keystone-shaped brackets which carry on their flanges the reinforced concrete beams on which the floor system rests (see Figure 3).

The concrete brackets were precast "to obtain the exceptionally high strength which they require and also to avoid the necessity of erecting complicated forms for them at the construction site," the designers report.

The sequence of this unique undertaking is followed



Figure 5—Second stage prestressing: Remaining cables in each girder are put under tension and elongation measured. These cables emerge at top edge of girder near end.

partially by illustrations on this and the preceding page.

In Figure 1, the formwork for two of the girders is pictured with precast end anchorages visible and one of the precast concrete brackets being lowered into place before pouring of the beam. In Figure 2, two workmen are threading the steel tube sheathing onto one of the 12-wire prestressing cables. The sheathing will prevent the concrete from bonding to the cables during pouring.

In Figure 3, workers are placing the sheathed prestressing cable into the formwork prior to the pouring. In Figure 4, the girder has been poured and workers are prestressing cables at the anchorage end with a jack.

This is the first stage of the prestressing operation. The second stage is being undertaken in Figure 5. A workman is measuring elongation of the prestressed wires.

Figure 6 is a photo of the underside of the floor system showing the now prestressed girders and their precast brackets forming complete units.

Contractor in the unique project was the George A. Fuller Co., A.G.C., New York. The Preload Corp., consulting engineers specializing in prestressed design, were commissioned to design the girders.

A number of prestressed roof girders have been put in place, particularly in the Southwest. The first prestressed roof slab was laid recently in San Antonio (*January Constructor*) and a 62% saving in steel reported on that project.

The lower steel requirements of the method have brought it into widespread use in Europe where materials are more scarce. In this country, new developments are being announced frequently.

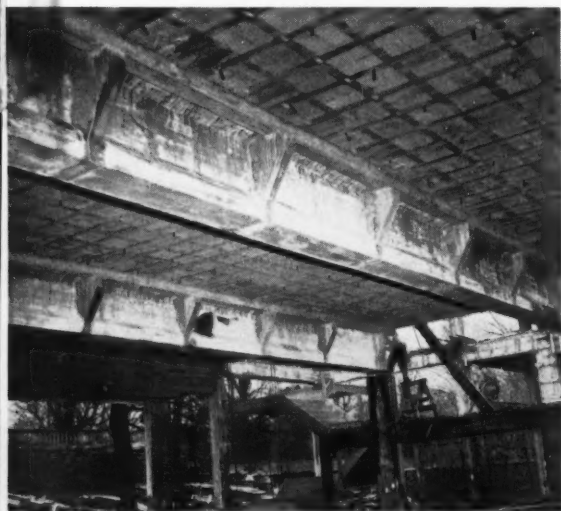
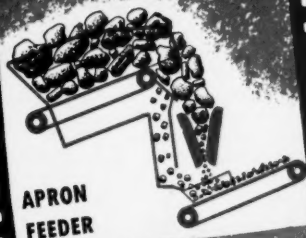
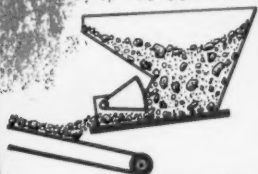


Figure 6—Looking up at the underneath side of the fully prestressed concrete girders with flooring in place.

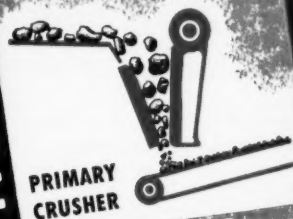
BASIC UNITS



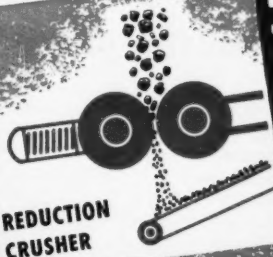
APRON
FEEDER



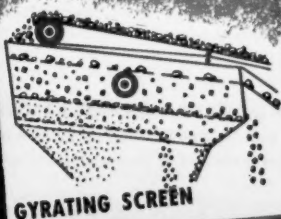
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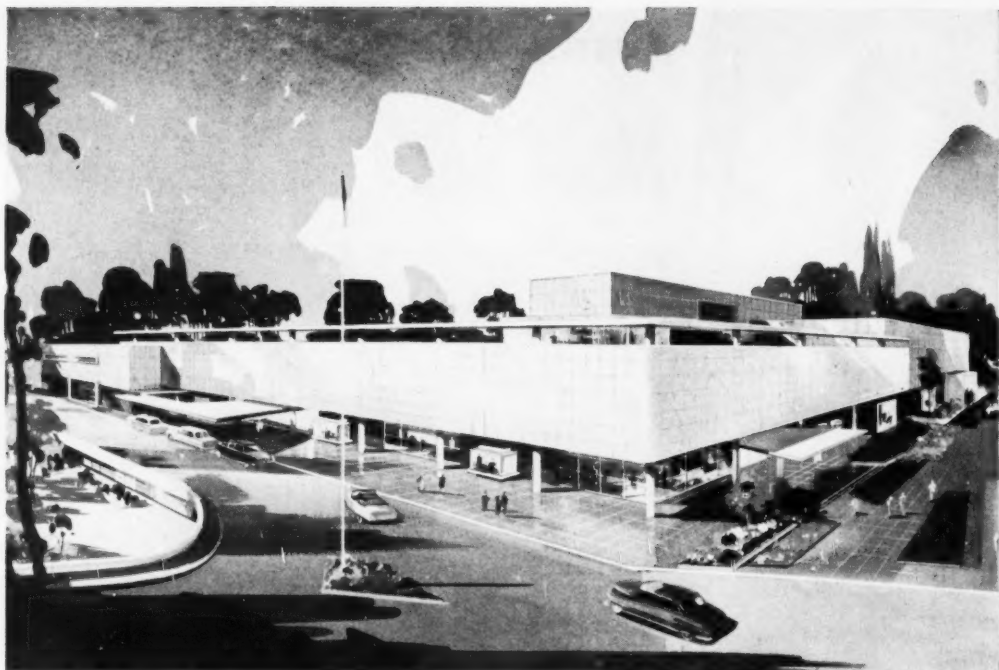
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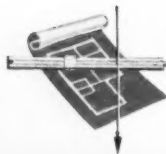
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» THE PREPONDERANCE of the nation's practicing architects are convinced that modular coordination is a good system right now and will work even better, the sooner it becomes universally used throughout the building industry. This is the position taken by their spokesman, The American Institute of Architects, and is reflected not only by its official statements on the subject, but also by The Institute's program for accelerating the present trend toward the general use of the modular method. Since 10 of the 17 members of the A.I.A. Board of Directors follow the modular system in their own architectural practices, it is only to be expected that The Institute should promote modular coordination with an enthusiasm born of conviction.

The materials and dimensions of buildings are governed by the architect's specifications and drawings. Hence, his approval and use of modular sizes and modular dimensioning is of real importance to the contractor. With architects in every section of the country now relating building dimensions with materials sizes (through modular coordination) so as to permit more orderly construction, contractors will recognize this as a sincere and significant move in the right direction—in the direction of "pre-engineering" for greater efficiency on the site.

Discusses Method

Modular coordination is just a sensible system of dimensioning; it does not change construction itself in any way. The system is essentially this: you standardize on window sizes, for example, that are just so-many bricks wide, instead of so-many bricks plus a fraction of a brick. It means they will go together more easily, more cheaply. The same with door frames: make them an even number of units high and wide. Do the same with more and more products, not just masonry. The more products that are coordinated with each other in size, the more efficient and economical construction will become.

This is just what modular coordination has done for many products already, and is now doing for many more.—It has coordinated their sizes by the use of a module of 4 inches: Modular bricks are 2 or 3 modules long (8 or 12 inches) from center-to-center of mortar joints, modular windows fit exactly into openings whose widths are even multiples of that same 4-inch module: say 3'-8", or 4'-0", or 4'-4".

Mixing Modular, Standard Sizes No New Problem, Architects Say

- Modular Coordination Promoter Hits Critics
- "All That Could Alarm Contractors Is Its Name"

By William Demarest, Jr.

American Institute of Architects' Secretary for Modular Coordination

EDITOR'S NOTE: This article was contributed by William Demarest, Jr., A.I.A.'s "Secretary for Modular Coordination." THE CONSTRUCTOR in November and December 1951 published articles based on answers to a questionnaire on modular coordination sent to A.G.C. building contractors and chapters by the association's Building Contractors' Division.

Details of contractors' experiences on modular jobs were asked after practical difficulties being encountered at the present time in use of the method were revealed at recent A.G.C. meetings and in discussions by both architects and contractors at meetings of the Joint Co-operative Committee of the A.I.A. and A.G.C.

Generally, contractors reported many "headaches" and added expense when both standard and modular design and both sizes of materials were used on the same job. A few reported unqualified endorsement of the method. Principal "gripes" of interest to architects were reports of their failure in many cases to follow through on modular design, resulting in much cutting of masonry and other difficulties. Regarding materials, many respondents reported modular sizes of many types not widely stocked, and some noted varying dimensions in "modular" masonry products.

While most reporting contractors noted such practical difficulties now, most also indicated belief that the method would be of great value in time, when all concerned have a full understanding of the system and when all materials are available in modular sizes.

THE CONSTRUCTOR will devote space in future issues for comments by all concerned, including materials producers, whose experiences can contribute useful information on the method.

By making use of the 4-inch module as a common denominator, the modular method can coordinate the stock sizes of building materials so that each will fit together easily with the others.

Since the joints themselves generally take up a definite amount of space, the actual dimension of a modular-size unit will often be a certain number of multiples of 4 inches, plus or minus a joint thickness. Since the manufacturer took all this into account when he set up his modular sizes, the plans for a modular building can be laid out in even multiples of 4 inches—just as if there were a grid of 4-inch squares on the blueprint with each dimension running from one gridline to another gridline. As has always been done, there will be additional large-scale drawings showing in detail how the construction takes the joints into account. On these details, the 4-inch grid actually appears, so as to show how each modular unit—whatever it may happen to be—fits in a definite position relative to the gridlines which are on either side of it. No matter where it occurs or how often it is repeated, each particular modular unit will easily be located in the same definite "grid position."

The modular method is more definite than the old, uncoordinated way of dimensioning; it takes much of the guesswork out of building. It has been found, for example, that this is one reason why contractors' estimators are so strongly in favor of the system.

It is indeed true that the field reports of the A.I.A. Secretary for Modular Coordination agree with the November, 1951, CONSTRUCTOR's opinion that some architects do manage to take the simple modular system and complicate it unnecessarily.

[• EDITOR'S NOTE: THE CONSTRUCTOR has offered no such opinion of its own, but summarized the conclusions of contractors reporting. THE CONSTRUCTOR offered its columns as a forum for comments "from architects, materials producers, contractors and

all others whose experiences can contribute useful information" on the method.]

Such architects, he has found, will be the exception, not the rule. (Doubtless, the non-modular drawings from these same offices used to be disorganized, too.)

No New Problems Seen

Regarding additions to non-modular structures, or new construction using both modular and non-modular materials, no new problems occur that the contractor would not have to deal with anyhow. The reason the modular method has become more than just a theory, the reason why it is possible to put it into practice right now is that it is not rigid.

We don't have to wait for perfection before it will work: If the architect will dimension his drawings modular, construction will be modular where such materials are available and, elsewhere, the contractor will face nothing worse than his old problem of working to the dimension shown. The oppor-

tunity is created for better "pre-engineered" construction now—long before that happy day when every building product will be stocked in modular sizes.

To carry the same point further, one mason foreman has enthused over the way modular drawings have simplified his job where none of his materials were officially "modular." The old "standard" brick can be laid up a modular 3-courses-in-8-inches, so the masonry was modular as to height, at least; a regular rule was enough to make his storey pole. This foreman had grasped the opportunity offered by the modular drawings.

"Haven't Given It a Real Try"

On reading a few of the letters from contractors about modular construction which were reprinted in *THE CONSTRUCTOR*'s November and December issues, one wonders—How can a simple system of dimensioning, which works so well for some, become a hindrance to others unless they haven't understood it and given it a real try? When

asked their opinion on any change, certain people will from habit refuse to grant that anything which is different from the custom might also be better. Inevitably, some of the writers whose letters were reprinted seemed to be of this kind.

But one would not expect *THE CONSTRUCTOR* reporter, in commenting on the letters, to miss the fundamental significance of modular coordination and seemingly conclude that "Regardless of whether the method might eventually prove successful, . . . the advisability (is questionable) of pushing the method at the present time. . . . The method cannot operate with complete success until manufacturers throughout the country make all products in modular sizes. . . . Time will be required for architects, contractors and workmen to secure an understanding of the system."

[• **EDITOR'S NOTE:** *THE CONSTRUCTOR* reporter listed in the November issue, not his own comments, but those reported by many general contractors, including major points drawn from their experiences on the job. The article stated, in part: "... some contractors questioned the advisability of pushing the method at the present time when it is difficult to secure materials and it becomes necessary to use substitutes in order to complete projects."]

Such statements, not quite incorrect in themselves, are of only secondary importance in the light of this fundamental set of facts: (1) In recent years, the cost of building, one of mankind's basic needs, has soared to new heights. The problem is generally recognized; suggestions are many; solutions are few, tentative, incomplete. (2) One basic approach to more economical good construction lies in the simple trick of designing buildings so that each dimension is a multiple of materials' unit sizes, while seeing to it that the units of different materials will be coordinated in size to fit with each other. That's all that modular coordination amounts to; the only thing about it that could possibly alarm a contractor is its name.

Broad Use Seen in Decade

Along with these facts, consider: (3) The modular method has proved itself. It works. It is well beyond the "bright idea" stage; it is not just some hazy hope for the future. There were plenty of letters in the November and December issues of *THE CONSTRUCTOR* showing that some architect-

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BUILDING

contractor teams are putting it to work right now. And the final fact is that (4) modular coordination is here to stay anyhow. With each season, there are more architects, more manufacturers, more contractors who make use of this system. It has already been developed, although not on as broad a basis as it will be within another decade. It will be with us permanently and many firms are already turning this fact to good advantage. That being the case, of course, a realistic contractor will learn to live with it whether he approves or not. But the wise contractor will go a step further than this: he will find out what the system offers and hasten to put it to good use.

—That is the kernel of what the architects have to say on the subject. A number of letters have been received at A.I.A. headquarters, written by Institute members who wanted to comment on the views expressed in the recent *Constructor* articles. Excerpts from several are quoted, to document the reasoning outlined above and to relate at first hand the actual experiences with modular coordination which architects report and the conclusions they have drawn from those experiences:

Urbana, Ill.: "Recently a kind friend of mine, knowing my sincere interest in the modular coordination idea, called my attention to the article, 'Modular Coordination System Poses Many Practical Problems', in the November 1951 issue of *The Constructor*, the magazine of The Associated General Contractors of America. The article had interested and bothered me, and I was pleased to be asked for an opinion on the original story and the published contractors' comments. Let me give you a little background that may explain my present feelings and thoughts on the subject:

"In about 1947, while I was in industrial and heavy construction practice in Chicago, I was first exposed to and interested in the modular idea by Howard Cheney and A. Gordon Lorimer, who conducted special 'clinic' type educational sessions for firms interested in the then-unfolding veterans' hospital construction program being initiated by the Army Corps of Engineers. Soon after my associates and I tried the approach with several modest concrete masonry unit and brick structures with encouraging results; and then followed a steel frame and masonry modular industrial build-



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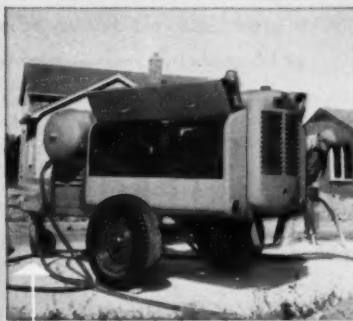
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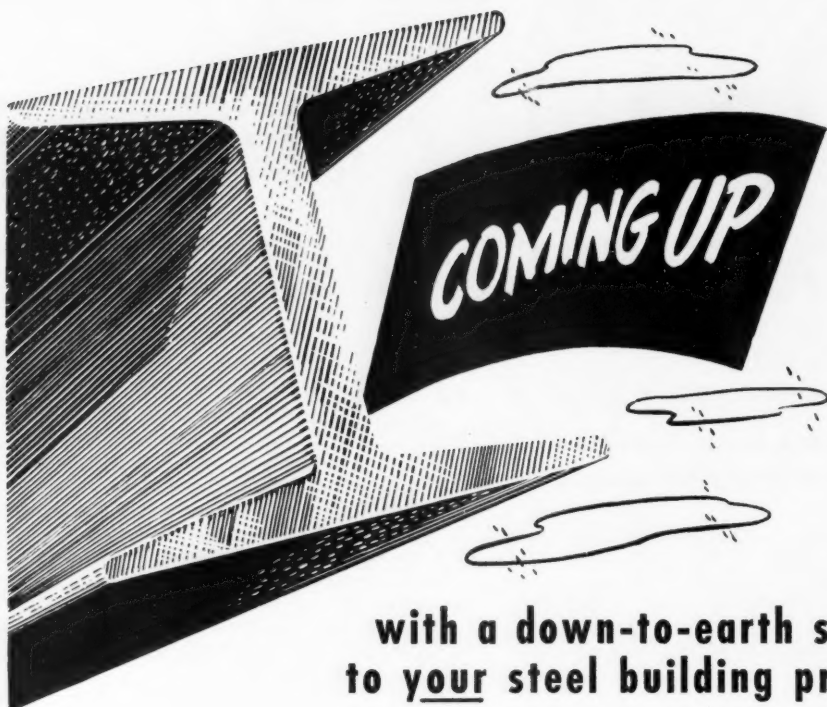
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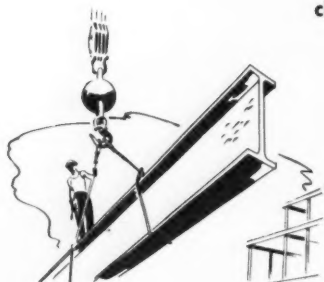


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ing of major scope. This latter project has been adjudged quite successful with the passing of a little time, but the fact remains that the architects and engineers, the client and the general contractors, when polled for an opinion on the modular experience, agreed that they were quite doubtful. Why? I believe that lack of assurance of all-modular material availability was the chief concern, for all seemed to agree that this then-finished first major building had gone well, and that the cost picture had been bright.

"I have become interested in frame buildings, too, and now have a modular frame residence for my own family nearing completion. I am, as a recent practitioner, convinced that the modular idea is a sound one. As an educator, with complete candor I now tell my students that modular coordination is a 'must' for their development—for within their professional lifetimes it will be the accepted mode of planning and construction."

Mixed Systems "No Problem"

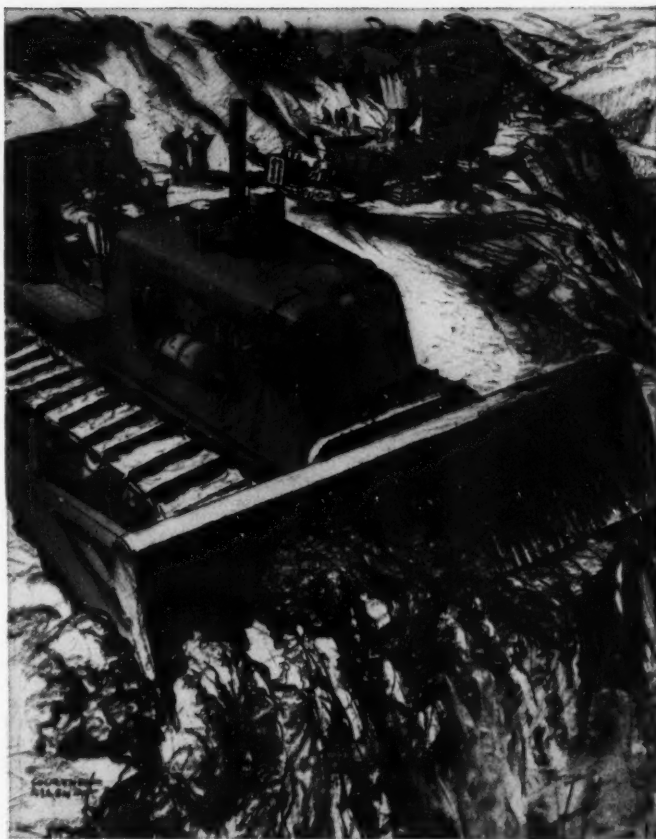
Landisville, Pa.: "Commenting, in general, upon the conclusions of the November *CONSTRUCTOR* article we would note the following:

"1—Mixing standard and modular materials on the same job does not create any real problems except that the full benefits of modular coordination cannot be attained. It has not increased our costs on the job but also has not decreased them as can be done in a fully coordinated job.

"2—Granted not enough manufacturers are producing modular materials; however except for completely 'open specification' jobs there is a representative group of manufacturers producing modular materials.

"3—The creation of bidding uncertainties for the general contractors, we have found, can be blamed entirely on the general contractor if the architect's drawings are properly made and a statement to the effect that the job is designed on the basis of modular coordination accompanies the drawings. Much education and cost keeping on the part of general contractors and workman is needed. It is the contractor who will educate himself and his workman who will benefit.

"Based upon our State-Subsidized Housing Project No. 17, Hickory Tree Heights for the Lancaster Housing Authority, which is now completed



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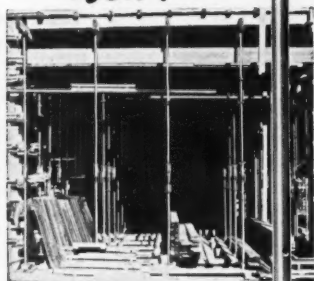
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and occupied, we can offer the following:

"(1)—The contract was signed with the owner on January 27, 1950. The preliminary studies, specifications and cost estimates were submitted and approved on March 3, 1950. Working drawings and specifications were submitted to contractors for bidding on May 17, 1950. Bids on the project were received June 12, 1950 the low bid being \$842,118.00 within one-half of 1% of our preliminary cost estimate submitted on March 3, 1950. The contract was awarded on July 17, 1950 and the project was completed and accepted August 15, 1951. It should be noted that 75% of the housing units were occupied prior to July 31, 1951.

"(2)—Experience on this project proved the following points for modular coordination:

"a. A saving of 32.5% was effected in the cost of masonry alone by using modular units.

"b. Waste of lumber was cut to an absolute minimum through the use of modular lengths.

"c. Carpentry labor was reduced to a minimum through the precutting of all carpentry materials so that there was not cutting and fitting necessary for final installation.

"d. Further education of the workman by the general contractor is necessary in order to obtain the demonstrated possible savings due to modular coordination.

"e. Experience unit cost records for the general contractor are necessary over a period of time for the demonstrated possible savings due to modular coordination to be reflected in the contractor's bids and thereby accrue to the owner."

"Lack Imagination, Ability"

Appleton, Wis.: "Our Reactions to the 'unfavorable answers' are as follows:

"1. Were the architects' modular drawings complete?

"a) If they were, the contractors appear to lack imagination and ability to grasp the fundamental simplicity of the intent of coordination whether it be modular or just coordinating the entire project.

"b) If they were not, then the work would be no more difficult than in ordinary layout.

"2. The pro and con of modular coordination versus ordinary coordination in this office now is as follows:

"a) As associate architect for an office building project, now under construction, costing in excess of \$3,000,000, we have received from the designing architect, since the contracts were awarded, one completely revised set of structural drawings, nine of 18 sheets of heating and ventilating drawings have been revised from one to six times, 15 of 23 sheets of architectural drawings have been revised from one to three times and so on. These revisions were *not* made due to changes by the owner. This project is non-modular.

"b) As architect for an elementary school building now under construction, costing in excess of \$900,000, our contract drawings consisting of 59 drawings 36" x 24" were revised once due to the request of the owner for certain omissions and once for certain additions. We have since issued 17 supplementary drawings 36" x 24". These supplementary sheets contained large scale interpretations of the small scale contract drawings. This project is modular coordinated throughout.

"c) In connection with the office building our superintendent is in our office several times daily for consultation. The building is about 50% complete.

"d) In connection with the school our superintendent *may* call this office once a week and calls at the office only for the usual two to four week progress meeting with the building committee.

"e) There have been many extras to the office building and there have been *no* extras to the school.

"Using standard and modular materials on the same project has not caused trouble or expense here. The contractor and his staff on two projects, drawings for which were prepared by this office, merely used their ordinary mental abilities and proceeded with the work as outlined. One project cost \$150,000, and the other \$900,000, and both projects used non-modular face brick with modular block back-up. There does not appear to be the responsibility placed on the architects to design in modular coordination as there is for non-modular, due to the simplicity of the basic thought. No contractor here has complained that costs have been increased where bricks were available in modular sizes but back-up materials, doors or windows were not.

"Modular coordination has been in practical use by this office for seven

years and we do not find the method 'geared to precision and close tolerances'. We find the methods and conditions are just the opposite.

"On remodeling work, it appears that some ingenuity by the architect and contractor may be necessary but, as has been said, 'the difficult we do immediately, the impossible may take longer'. After all, who in America wants to be 'included out' of work that requires ability? Production lines, materials packaging, and other modern methods of living would not be in use if the contractors' defeatist attitude had been adopted. An understanding by the architect, contractor, and workman will require time, however, what is there any where that is worthwhile that does not require time and effort?"

Harrisburg, Pa.: "I should like to comment relative to the article on modular coordination which recently appeared in *THE CONSTRUCTOR* along with the comments of general contractors, some of which were favorable and others unfavorable in their tone:

"In the first place, I believe that very few of these contractors understand the principles of modular coordination. It may be due to its name or for some other obscure reason the contractors think that it embraces a new and radical system of construction which is a distinct departure from their present methods."

Contractors "Not Aware of Savings"

"As a matter of fact, modular coordination, stripped to its essentials, is simply a system of dimensioning of drawings so as to coordinate them with standard products which will fit together with a minimum of field labor cost. The fact is that most of the savings on the average construction job are reflected in the subcontractors' proposals, and I am convinced that in most cases the contractor is not aware of these savings, nor is he aware of any change from his normal construction methods. From my observation, I am of the opinion that many subcontractors have not yet given consideration to the savings which accrue to them in constructing modular work. I am also convinced that if the general contractors would more closely follow the details of their construction instead of depending entirely upon their subcontractors they would not only be able to effect appreciable savings, but would obtain considerable satisfaction in producing a job

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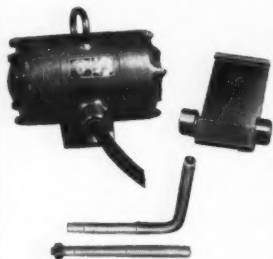
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which would again reflect the skilled craftsmanship which has been missing these many years in our building endeavors."

Champaign, Ill.: "Modular coordination is not a cure-all. I do not believe anyone has ever attempted to sell it as such, but there seems to be a surprisingly large number of builders who expect to have no problems at all merely because the architect has prepared a set of drawings on the assumption that modular materials are available. The criticisms contained in the article in *THE CONSTRUCTOR* do not convince me that the builders' troubles were due to the modular method at all. Those same troubles and more too might have existed without dimensional coordination, because if you tabulate the objections raised, you will find that they include such long standing difficulties as material supply, accuracy of workmanship and incomplete or inaccurate architectural drawings.

"... Our work has been very largely in frame construction, and here again, the present state of development of the modular idea has not progressed as far as it has in masonry construction... We are certainly far from perfection, but our studies, both in material quantities and man hours of labor, indicate that real savings can be made through the organization of the job, and *modular coordination is the key* to that organization."

"Still Things to Be Learned"

Washington, D. C.: "In our work, as much attention was given to the employment of the modular principle in design as in construction. These two steps are inseparable and I agree with everyone who says that architects must take the lead by producing modular designs... We were interested in the application of modular principles to wood framing as well as masonry construction. We were able to build windows, storage units, roof trusses and such components to work with the modular frame in virtually a complete application of modular principles for 30 houses. The constructed frames were indeed a beautiful example of economy of materials and construction labor.

"There are still things to be learned about modular coordination both on the design board and on the job. Obviously both processes will be simplified as additional modular products are made available by manufacturers.

Modular coordination will continue to make progress as a logical method for improving the quality and quantity of production by the building industry."

Minneapolis, Minn.: "One of the greatest advantages of modular coordination to the architect is that it permits him to use a design module in designing his buildings. This design module is a 3'-4", 3'-8", or 4'-0" grid. These are some we have used, although any convenient module that is an increment of 4 inches is satisfactory. These grids determine the window openings or mullion centers, locate many partitions, and eliminate a large amount of dimensioning. And they fit in automatically with modular units whether they are masonry, glass blocks, or windows. The lighting fixtures, acoustic tile, and ceiling grilles are all located by these grids.

"I want to make a special point of the value of these design grids. They afford a tremendous opportunity to save time, material, and money. They reduce chances of making errors in the drafting room and on the construction job. I just can't say enough good things about them."

Skepticism Changes to Enthusiasm

"My modular experience began about five years ago when our office was commissioned to do the Veterans Hospital for Duluth. I was very skeptical when it was decided at the top level to do the job on the modular basis. However, it was not long before I could see a better method of building. From that time the 'modular magic', as we have come to call it, became a part of our daily architectural lives. A few years later our office adopted the modular method as standard office practice.

"To appreciate the system an architect must believe that a masonry building should be laid out to masonry measurements, both vertically and horizontally. To do this under the old system, the architect was obliged to use the brick scale which told him how many bricks and how many joints for every wall, pier and opening. Then he had to add a joint for the openings and subtract a joint for the piers, and he ended up with dimension numbers that were loaded with fractions of inches, making them difficult to letter and to check.

"In the modular system, measurements are in multiples of 4 inches. This simplifies dimensioning in several ways. You do not have to use brick scale—the architect's scale is sufficient.

With everything on a 4-inch module, every nominal dimension is in feet and even inches. It is so simple that you can check dimensions very easily.

"The module measurement is not only 4 inches, but is also definitely located. For example, in a course of nominal stretchers every other 4-inch module will fall on the center of a brick joint. For convenience, these are called grid lines.

"I will discuss the value and simplicity of these grids in a moment. First let me explain two important modular terms—'nominal' and 'actual' dimensions. Suppose you take a modular brick and butter it on all 6 sides with exactly enough mortar to make half a joint. And you take many more modular brick and butter them in the same manner. And you lay them in a wall 3 bricks thick. Because the width of a brick and a joint is 4 inches, you will have a wall 12 inches thick. But it is silly to have a half-joint on the outside of the wall and half a joint on the inside of the wall, so you take them off. And you have a wall that is actually 12 inches less one joint thick. The same is true in the length of the building. A building that is dimensioned 100-0 is actually 100-0 less one joint long because the exterior grid lines are a half-joint outside of the face of the brick. I have been asked many times how I am going to explain to the bricklayers that I want the building shorter than I said I did. I have answered that bricklayers are smart people—they understand.

"Our office has recently adopted the modular cement block as standard office practice. That means we will not approve non-modular units on our jobs. In addition to regular blocks, the modular suppliers are making pilaster blocks, lintel blocks and other special shapes that open up a new world in cement block construction. I want to commend these manufacturers who have converted to the modular method.

"During the several years that I have lived with modular coordination I have become convinced that it has tremendous possibilities toward the end that we will build good buildings better and with less labor and material than we would be able to do with the former methods. But there is much more work to be done."

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pay off he has to understand it and practice it thoroughly and completely. He must detail and specify accurately and use modular materials properly and intelligently. He must educate his staff and his clients on the modular method. I am sure that he can do this easily if he will try. I say easily because I believe the system is so simple and so mistake-proof.

"A similar responsibility lies with the manufacturers. I appreciate the problems they have in converting their plants. It has just been a few short years ago that I was criticised for using modular brick because the selection was so limited. But it has been some time now since our chief designer has complained that he is unable to find a modular brick that he likes—just because so many brick

plants have by now been converted.

"Glass block, at least the 8 x 8 and 12 x 12, are not problems because they come in modular sizes. Perhaps asphalt tile could be in 8 x 8 size and ceramic tile 4 x 4 including the joint. The plaster and paint manufacturers seem to be the few who can relax.

"The efforts of the architects and the manufacturers will not be enough. It will take a lot of help from the various contractors. First of all in trying to understand the system and in giving the system a fair trial. Don't say that it is no good just because you have never used it before. And don't let it scare you. It is not complicated and full of a lot of mysticism. It is a simple system if you will only be open-minded and try to understand it."

\$15 Billion School Building Need Reported

● Federal Aid Requested for 600,000 Classrooms

» ABOUT \$15 BILLION worth of school construction will be needed shortly to meet unprecedented enrollments and replace obsolete buildings, Earl J. McGrath, U. S. Commissioner of Education, told Congress last month.

In making a progress report on the school facilities survey being undertaken in 43 states, McGrath said, "The need for school house construction today is without precedent in the history of this nation."

His office estimates a need for 600,000 new classrooms besides supplementary facilities—gymnasiums, cafeterias and offices. About 252,000 are needed to erase the construction backlog alone. In addition, 126,000 for normal replacement and 222,000 to house peak enrollments expected soon should be built, he said.

The 222,000 classrooms would take care of a 25% boost in school children enrollments during the period 1952-58 and would cost an estimated \$5 billion besides the \$10 billion current need.

The progress report on the current facilities survey reveals that a discouraging number of obsolete buildings form a part of today's school plant. It states that 40% of the school buildings covered in the report are over 30 years old and one in six is over 50 years old. About 61% of the present classrooms are overcrowded, besides the whole category of "unsatisfactory" school plants and

schools in rented or makeshift quarters.

"In short," McGrath said, "even where a school plant is acceptable, 61% of the classrooms are overcrowded—three out of five classrooms in good plants are overcrowded or extremely overcrowded. This is the situation as of now. Tomorrow it will be worse; and it will continue to get worse right through the decade, unless more buildings are constructed."

Two out of five school plants were found to be "unacceptable" on the basis of location, educational adequacy, structural stability and life-and-health-protective features. A third of the pupils surveyed are housed in buildings not rated acceptable in fire safety, McGrath reported.

Declaring that "the present bottleneck is not scarce materials but scarce dollars for school construction," he called for federal aid in some form to meet the need.

"In my judgment, this school construction problem will not be solved until the taxing resources of the nation are employed to provide the funds to supplement those of states and communities in meeting the needs of the nation's children."

The first progress report was based on data submitted by 25 states which have completed their surveys. Figures on national needs were projected from these results—representing 40% of the U. S. school population.

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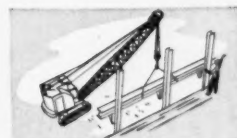
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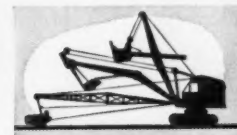
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Navy Bid Items Reduced

The Navy's Bureau of Yards and Docks has ceased the practice among public works officers of calling for bids on basic items plus certain specified additions.

Contractors have protested that an invitation for bids on a basic project plus a number of other items caused a shifting base that yielded unfair results. Occasionally the low bidder on the complete project was passed by in favor of the bidder who had bid low on the particular additional items the officer selected finally to let under contract.

The problem was discussed in a meeting between bureau officials and The Associated General Contractors of America Task Unit for Bureau of Yards and Docks Specifications and corrective measures were promised. Subsequently, Navy public works officers were informed last month that the number of bid items should be reduced to a minimum.

They were instructed to invite bids on as much of a project as they could reasonably expect to accomplish within their available funds. Other bids excluding certain specified items may be solicited only if necessary to insure award within available funds, the instructions said.

Big Year for Pipelines Seen

Barring unforeseen circumstances, 1952 will witness "the greatest oil pipeline construction activity in history," John E. Boice of the Petroleum Administration for Defense told oilmen last month.

PAD has approved plans for about 6,500 miles of crude oil lines and 3,500 miles of products lines this year, Mr. Boice revealed. In comparison, only 2,866 miles of principal lines were put in last year—a result of the line pipe shortage.

Priorities aid for the third quarter includes approval of six major natural gas pipeline projects with a total estimated cost of almost \$216 million. They are being allocated 169,600 tons of pipe, 16 in. or larger.

An additional 214,800 tons of pipe have been allocated to several hundred smaller jobs for third quarter.

Navy Reveals Concern Over Recent Rash of Bid Errors

- Unprecedented Number of Contractors Ask Relief
- Bureau Urges More Caution in Bid Preparation

AN INCREASING number of requests from low bidders for release from the contract has been noted by the Bureau of Yards and Docks on Navy construction projects.

Whereas only a few bidders each year normally seek adjustments after the bids are opened, the first three months of 1952 have seen 20 low-bidding contractors claim errors in their bids, the bureau reports.

Large Contractors Err, Too

Only one such request has been denied, the bureau's contracts manager said last month, but the unprecedented rash of the irregularities has caused the bureau some concern. "We expect such requests occasionally from low bidders—especially if they are small firms and short on experience," a bureau spokesman said, "but some of these are from large contractors whose names are synonymous with responsibility."

Several of the errors have reportedly been in large sums—two of \$2 million each and one of \$500,000. In the case where the contractor was held to his bid, the error was about \$1.5 million.

The bureau has affirmed its belief that the mistakes claimed were genuine. A cursory survey of them showed that one claimant forgot to add the profit item, another neglected to add in one sheet of figures, and another blamed a faulty adding machine.

Bonding Firms and A.G.C. Consulted

Navy officials, in a conference with representatives of bonding company associations and The Associated General Contractors of America, said that obvious errors in arithmetic or failure to add to the total an item listed elsewhere are not ordinarily held against the contractor.

Low bidders have received leniency at times for such errors as computing an estimate for one of several units and forgetting to multiply by the number of units involved. Such errors in judgment as estimating brickwork to cost \$60,000 when more thorough examination reveals it would cost \$100,000 are not permissible as a

basis for releasing the contractor, the bureau reports.

In the current instances, the bureau asserts that erring contractors will not be "blacklisted," but that the bureau is appealing for more careful preparation of bids. Some of the low bid errors were attributed to hasty, haphazard estimating in the urgency of the defense effort. In addition, some contractors who have never bid on government work heretofore are possibly making mistakes because of inexperience, it was felt.

Upon receiving request from a low bidder that his bid be set aside because of honest established error, the bureau has several possible courses. It can accept the next lowest bid. It can throw out all the bids and re-advertise, a costly procedure, not only for the agency but for contractors who must prepare new estimates.

Adjustments Not Favored

It has authority to allow inclusion of the item the low bidder omitted and award the contract to him at the new price. This is permissible only if the new figure is still below the second low bid and the error is less than \$50,000. However, the bureau has never utilized its authority to grant price increases and there is little likelihood that it ever will do so, officials claim. The new figure may be barely below the second low bidder and provoke criticism from that source. Allowing adjustments is a step toward auctioning off construction jobs, the bureau feels.

The administrative cost of investigating a low bidder's claim of error and releasing him from the contract could become burdensome, the Navy believes. The danger of arousing suspicion among other bidders has also been of serious concern.

Speaking for the contracting agency, a bureau representative told the A.G.C. and bonding company representatives last month, "The errors are costing the bureau money and causing embarrassment. They are posing a problem for the surety companies. But they are hurting the contractors and their reputation most."

Dams Could Conquer Missouri River—Pick

• Chief of Engineers Blames Flood Threat on Lack of Money

GENERAL LEWIS A. PICK, co-ordinator of the Pick-Sloan Plan for flood control, irrigation and power development in the Missouri Basin, declared last month that, if dam construction had been on schedule in the stricken areas, there would have been no damage from the recent flood.

General Pick, chief of the Corps of Engineers, blames lack of appropriations for the incompleteness of the projects. If his original five-year program of dam building, started in 1946, had been supported by adequate funds, he affirmed, "we wouldn't have had a copper cent's worth of damage this year." He released data to show that Fort Randall and Garrison Dams, both incomplete now, could have impounded the Missouri River flood waters safely.

The general credited Fort Peck Dam in Montana with capturing its intended share of high waters, thus reducing the downstream crest 2 ft.

The flood blocked railroads at 27 points, disrupted 83 highways and breached 153 levees, the Corps of Engineers reported. There were 87,000 people displaced and 50 towns and 2.2 million farm acres flooded. Damage has been estimated at \$300 million.

General Pick paid tribute to contractors who helped raise levees in the Omaha-Council Bluffs area to prevent disastrous flooding there.

In Iowa, A.G.C. contractors sent fleets of trucks and earthmoving equipment into the threatened areas to throw up new levees. O. W. Crowley, secretary of The Associated General Contractors of Iowa sent out an

appeal for 100 trucks and contractors in and around Des Moines responded with 140. President of the chapter, Ray Van Buskirk, was first on the scene at Sioux City's municipal airport where runways were being endangered.

Twenty-three miles of levees had to be raised—with flashing and sand bags—in the bottleneck between Omaha and Council Bluffs. Contractors were kept busy on emergency jobs for the railroads, also, where roadbeds were swept away and rails inundated.

Reclamation Dams Hold

The Bureau of Reclamation reported last month, also, that dams built under its direction have met the "test of the century" by withstanding the floods raging along the Upper Missouri and its tributaries. The agency credited Shadecill Dam on Grand River and Heart Butte and Dickinson Dams on Heart River with catching huge run-offs and saving downstream farmlands from damage. All three structures were completed last year.

Nine Reclamation dams are now in operation and five are under construction. Ultimate plans call for 89 Reclamation dams, which, with the Corps of Engineers' main-stem structures, will hold 60 million acre-feet.

Total estimated cost of the Pick-Sloan Plan has been set at \$6 billion. Of the Corps of Engineers' share (\$1.2 billion), only about \$450 million has thus far been appropriated. Construction is expected to get underway this month on the Gavins Point Dam, a \$60 million Corps of Engineers project also in South Dakota.

Dalles Dam Gets Underway

A six-ton blast sent rock and dust towering into the sky a few weeks ago to start construction on the Corps of Engineers' newest big dam project.

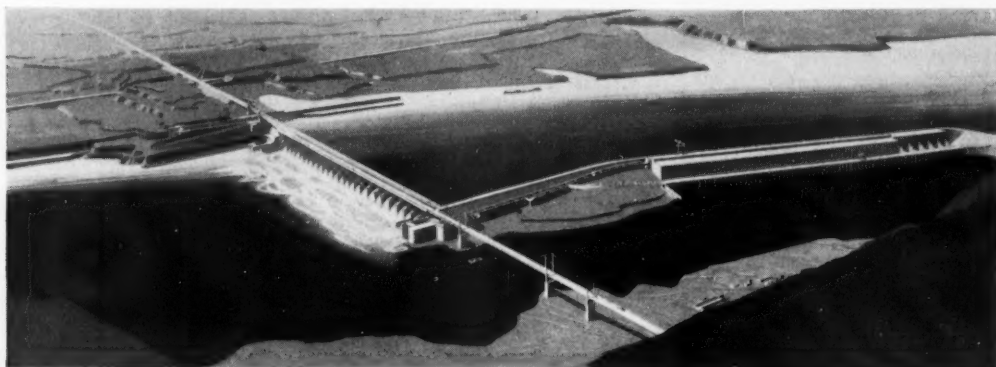
The blast was part of a ceremony marking official commencement of work on the Dalles Dam between Washington and Oregon on the Columbia River. The multi-purpose structure is slated to cost \$350 million and become the seventh of 15 major dam projects planned for the Columbia.

The powerhouse, almost $\frac{1}{2}$ mile long, will be the longest (under one roof) of any plant constructed or under construction in the world thus far. Although not a high-head development, the powerhouse structure will be as high as a 12-story building with a base set about 29 ft. below sea level. It will cover an area equal to about seven football fields.

The immensity of other features is apparent from some comparative statistics made by Gov. Douglas McKay of Oregon in a speech at the March 12 ceremony beginning construction. Power produced at the dam will equal that of 9 million barrels of oil annually. The spillway with its 27 gates will be about $\frac{1}{3}$ of a mi. long. The navigation lock will be the single-lift type, 86 x 675 ft.

First phase of the project is being undertaken by S. A. Healy Co., A.G.C., White Plains, N. Y. It consists of powerhouse excavation and cofferdam construction for a contract price of about \$4.9 million.

Architect's sketch of the Dalles Dam and longest powerhouse in the world. Construction started on it recently.



McKIERNAN-TERRY PILE HAMMER

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Sets record for Long Pile Driving on Meadville, Pennsylvania relocation job

"We put this 14-in. H pile down 304.3 ft with a McKiernan-Terry S-8 Single-Acting Pile Hammer." That's the statement of L. A. Meyer, superintendent for S. J. Groves & Sons, contractor on this Meadville, Pa. bridge relocation job.

Naturally a powerful McKiernan-Terry Hammer set this impressive pile driving record. With a 26,000 foot-pound blow, the McKiernan-Terry S-8 successfully met varying ground conditions. Piles about 50 ft apart encountered both light and heavy resistance to penetration. Lengths averaged 170 ft with differences of as much as 100 ft between piles next to each other.

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A McKiernan-Terry S-8 Single-Acting Pile Hammer driving long-length steel piles for relocation work on a five-span bridge near Meadville, Pa.



L. A. Meyer, contractor's superintendent, standing alongside the record-depth pile driven by McKiernan-Terry Hammer.

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GRADALL—THE MULTI-PURPOSE CONSTRUCTION MACHINE *with Controlled Down Pressure*

Cranes Ease Traffic Problem Past Seattle Viaduct Job

By Ray Bloomberg

COMPLETION this fall of a \$10 million double-deck viaduct to divert traffic past the central business district will do much to solve the traffic problem at Seattle, Wash.

The city has an "hourglass" figure, pinched at the waist by Puget Sound on the west and a steep hill on the east. As a result, most north-south traffic must pass directly through the business district, already crowded with buses and parked cars.

The new six-lane viaduct will enable drivers wishing to cross the city, north or south, to speed along the waterfront past the congested business district and over all the cross streets.

Construction of the viaduct, itself, poses a traffic problem. Its route, the Alaskan Way, parallels rail lines and crosses numerous spurs leading to piers and warehouses. The contractor's operations virtually are restricted to the right-of-way provided for the viaduct.

Cranes Span Railroad Track

To allow rail service to continue at all times, the contractors have put into use two Washington (Model 28-105) revolving gantry cranes. These cranes solve the problem by spanning the railroad track, allowing trains to run through while operations continue.

One gantry is used for each deck, with plenty of space between the two. Operators have good visibility, looking down even on the upper deck, 55 ft. above the ground. Each crane has a lifting capacity of 42 tons.

Of the three contracts awarded for the viaduct project, one has been completed. MacRae Bros., A.G.C., Seattle, has finished a \$1.2 million unit—a six-lane elevated section of 58-ft. wide roadway at the north end—and is working on a \$1,063,569 contract for the southern section of the viaduct. Morrison-Knudsen Co., A.G.C., Seattle, and Rumsey & Co., A.G.C., Seattle, hold a \$3.7 million contract for the central section where the gantrys are used.

A subway, Seattle's first, will carry traffic from the north end of the viaduct to the Pacific highway leaving the city at the north. Cost of this unit is estimated to exceed \$2 million, but no contract has yet been let.

Methods Employed on Double-Deck Job

All foundations for the viaduct are supported on Raymond cast-in-place concrete or steel H-piles driven through the old fill material. After completion of the pile driving for each bent, the contractor constructs the reinforced-concrete footing and the section of columns for the lower roadway. Falsework is set up then and the cranes hoist and place materials for construction of the beams, girders, and deck slab of the lower roadway.

Sections of the columns for the upper roadway are constructed next, followed by construction of the upper beams, girders and deck slab. Falsework for the lower roadway is supported on driven timber piling, each capable of carrying a 30-ton load. This falsework and piling remains in position until after concrete for the upper deck attains its strength, so that the lower deck will not be required to carry the full load. The upper deck is supported by framed timber bents set on the lower roadway directly above the pile-driven bents.



One of the huge Gantry cranes being used on Seattle's new double-deck viaduct. Use of this type of crane allows free flow of traffic on the Alaskan Way highway and rail lines, both of which closely parallel the project.

The new viaduct carries north and southbound traffic past the tightly congested business district and over numerous cross streets and rail lines. The contractor had little room for maneuvering on this job. The project is expected to cost \$10 million.



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HIGHWAYS • AIRPORTS

Roads Official Cites Bidding Uncertainties

• But Sure Contractors Can "Adequately Cope with Situation"

» **THOUGH** the highway contractor's problems are great in the face of today's uncertain labor and materials market, W. C. Peterson, chief, construction branch, Bureau of Public Roads, said recently he felt confident that with present "contracting know-how" the major bidding problems will be adequately solved.

"The highway contracting industry is quite stable," Mr. Peterson told the annual Ohio Highway Engineering Conference at Columbus last month, "and even though we are in a period of uncertainty there is no doubt that our contractors will be able to adequately cope" with the situation.



Mr. Peterson

Competitive bidding, which exemplifies the American system of free enterprise, gives contractors throughout the country an "incentive to initiate improved performance methods in a highly competitive industry," he told the conference.

"Every contract is a new venture wherein the contractor is required to perform units of work at fixed bid prices under varying conditions without an actual appraisal of his actual costs. In other words, he is selling a product, the cost of which is not definitely determinable in advance of its manufacture."

To protect himself against possible loss and assure himself of a profit, the contractor must be assured of loyal key personnel, suitable equipment, delivery of needed materials, supplies and spare equipment parts, Mr. Peterson stated. The contractor must also know the physical characteristics of the work, for he will not be compensated for any mistake in his own judgment.

"First and foremost, however, (the contractor) must possess the requisite experience in construction. More than in any other line of work, perhaps, can it be said that there is no substitute for practical experience. Once the contractor has embarked upon his venture there is no turning back, and no amount of influence or persuasion will rectify his mistakes or permit him to evade the terms of his contract.

"To pursue any other policy would disrupt the competitive contract system and involve the submission of unsound bids from irresponsible parties in anticipation of favorable concessions not available to legitimate contractors," he told the conference.

Mr. Peterson reviewed the causes of the highway system's rapid obsolescence and the disruption of contractors' organizations after highways were declared expendable during World War II. Many firms turned to such work as airports and training camps, often under fee contracts.

After the war, Mr. Peterson continued, controls were relaxed, costs jumped and construction work advanced cautiously in an effort to help stem the rising prices. With trained construction crews dispersed during the war, contractors had to begin again training new groups of workers, and the whole industry had to compete with other agencies for scarce materials.

Now, with the phenomenal growth in highway use, which thus far has outstripped predictions, roads which were calculated to be good for 10 years are already overcrowded and congested, Mr. Peterson said. Motor vehicle registration has reached about 52 million cars which are expected to travel 500 billion miles over the nation's highways this year, he added.

43,000 Miles Needed Annually

"It has been estimated that approximately 13,270 miles of the surfaces of the federal-aid primary system in service during 1950, plus 29,100 miles on the secondary and 650 miles on the urban will wear out each year and must be replaced. This means that a construction program on the federal-aid system should complete each year about 43,000 miles of road improvement projects. This amount of construction would be sufficient only to keep our system even with its present position."

Mr. Peterson said further that his office is doing all it can to get the minimum amounts of critical materials needed for a balanced program of essential highway projects. Materials such as cement, asphalt, sand and rock are plentiful but the supply of steel is short.

Pointing out that materials suppliers

HIGHWAYS • AIRPORTS

have traditionally quoted firm prices, Mr. Peterson noted new bidding problems for contractors who must cope with either no firm quotations for steel or quotations with escalator clauses permitting increases before delivery, and uncertainties in delivery dates.

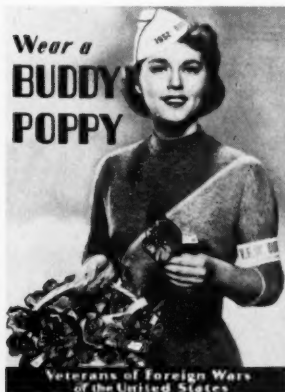
The situation, he went on, is so confused by the present allocation system that it is "next to impossible" to say when deliveries will be made. The result, he said, is that contractors do not want to tie up money and equipment when they know they cannot complete the job for a year or two, so they make their bids high enough to cover all contingencies that may arise.

The uncertain times have also decreased the number of bids per contract, Mr. Peterson added. Immediately following World War II the number of bids per contract jumped from 3.9 in 1946 to 6.3 in 1949. The 1951 average declined to 4.5, he said.

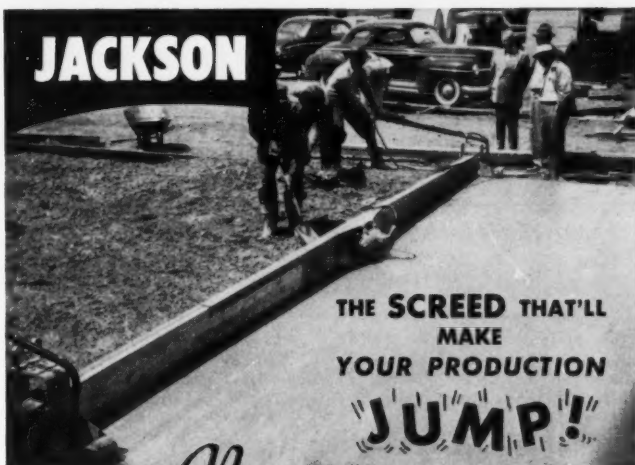
Most Favorable Prices Essential

With regard to competitive bidding for contracts, he said it is essential that the Bureau of Public Roads receive the most favorable prices from the contracting industry for the construction of highways. But, he added, the agency will not consider bids that are obviously too low, because such an action would result in needless controversies between the contractor and engineer in order to insure the required quality of construction and could possibly bankrupt the contracting firm.

The highway conference met April 1-3 on the campus of Ohio State University. The theme of the meeting was "progressive highway construction," and the moderator was E. H. Karrer, professor of highway engineering.



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Survey of Proposal Guarantees Required of Highway Bidders

State	Type of Guarantee Acceptable				Amount of Proposal Guarantee Required
	Bid Bond	Certified Check	Cashier's Check	Cash	
Ala.	x	x			In notice—usually about 5% of bid
Ariz.		x	x		In notice—at least 5% of gross bid
Ark.	x	x	x		As shown in proposal
Calif.	x	x	x	x	At least 10% of basic bid(1)
Colo.		x	x		In notice—about 5% of engineer's estimate
Conn.	x				One-third of bid
Del.	x	x		x	10% of bid with power of attorney
Fla.		x			As shown in notice to bidders
Ga.		x	x	x	As shown in notice to bidders
Idaho	x	x	x		5% of bid—check must be Idaho bank
Ill.		x	x		10% of bid—\$500 minimum(2)
Ind.		(see note (3) at right)			
Iowa		x			As shown in notice to bidders
Kans.		x	x		Usually 2½-5% of engineer's estimate
Ky.		x	x	x	Amount shown in notice—about 5% of total estimated contract
		(see note (4) at right)			
La.	x				5% of bid
Maine	x				\$500 on bridges—\$1000 on highways
Md.		(see note (5) at right)			
Mass.		x (see note (6) at right)			In notice—about 3% of engineer's estimate
Mich.		x	x		As shown in notice to bidders
Minn.	x	x			As shown in notice to bidders(7)
Miss.	x	x			5% of bid
Mo.		x	x		5% of bid—check on Mo. bank
Mont.		x	x	x	In notice—usually 5% of bid
Nebr.		x	x	x	In notice—5% of engineer's estimate
Nev.	x	x	x	x	5% of bid
N. H.	x	x	x		As shown in notice to bidders
N. J.		x			10% of bid—\$20,000 max.—\$500 min.
N. Mex.		x			As shown in notice to bidders
N. Y.		x	x	x	As shown in notice to bidders
N. C.	x	x			Sliding scale—\$13,000 max.—\$500 min.
N. Dak.		x			5% of bid
Ohio		x	x		As shown in proposal—\$10,000 max.
Okla.		x	x		5% of bid
Oreg.	x	x	x	x	5% of bid
Pa.		x			5% of bid
R. I.	x	x		x	In notice—3% of engineer's estimate
S. C.		x	x	x	As shown in notice to bidders
S. Dak.		x	x		In notice—bank draft accepted
Tenn.	x	x	x		5% of bid
Texas		x	x		About 5% of engineer's estimate—\$10,000 max.
Utah	x	x	x	x	5% of bid now but standard bid bond similar to federal being prepared
Vt.		x	x		About 5% of bid—\$10,000 max.
Va.	x	x	x		\$1,200 min. bid bond—\$1,000 min. check—or as advertised
Wash.	x	x	x	x	5% of bid
W. Va.		x			In notice—usually 4% to 5% of engineer's estimate
Wis.		x	x	x	As shown in notice to bidders
Wyo.		x	x		As shown in notice to bidders
BPR	x	x			As shown in notice to bidders
D. C.	x	x	x	x	5% of bid
Hawaii	x	x		x	5% of bid for bids under \$50,000 and reduced percentage for larger jobs
P. R.	x	x			As shown in notice to bidders

A recent survey by The Associated General Contractors of America reveals a great variety of proposal guarantee requirements among the different state highway departments. The results are listed at the left.

SPECIAL NOTES:

(1) In California the guarantees of the two low bidders are held by the state until the contract is executed and two bonds, one for faithful performance and one guaranteeing payment for labor and materials, have been furnished by the contractor. At that time the guarantee of the two low bidders, with the exception of bidders' bonds, are returned to them. All other guarantees are returned immediately after bid opening.

(2) Illinois will accept a bank draft, and if a bidder is low or second low, seven days after letting a bond may be submitted for the certified check.

(3) In Indiana the contractor submits a contract proposal as his bid. If his bid is approved as low, the document submitted, when properly executed, becomes the contract. A bid bond 1½ times amount of bid must accompany the proposal.

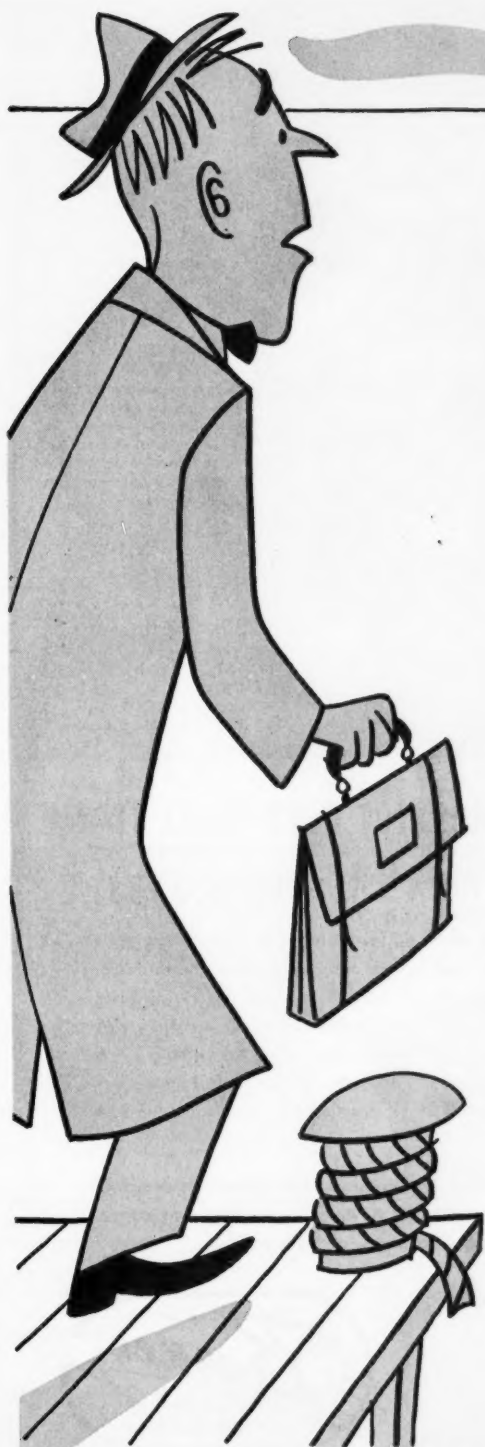
(4) Kentucky also will accept state road warrants or toll bridge revenue bonds of Kentucky.

(5) In Maryland the amount of the proposal guarantee is on a sliding scale. With the aggregate amount of the bid less than \$20,000 the proposal guarantee requirement is \$500. The amount of the guarantee increases by \$500 increments with the guarantee being placed at \$50,000 when the aggregate amount of the bid is between \$975,000 and \$1,000,000. Policy on certified checks and bid bonds follows:

(a) Certified checks are required on all bids in an aggregate amount of less than \$500,000. (b) On bids with the aggregate amount between \$500,000 and \$1,000,000, either a certified check or bid bond—the latter with the approval of the commission—is acceptable. (c) A bid bond is required in the amount of 5% on all bids in excess of \$1,000,000.

(6) Massachusetts also accepts securities, but not bid bond.

(7) In Minnesota each proposal form has a tabulation showing amount of check or bond. For example, with the amount of the proposal between \$15,001 and \$20,000 amount of check or bond is \$1,250, and with proposal between \$750,001 and \$1,000,000 amount of the proposal guarantee is \$48,750. On proposals of over \$1,000,000 amount of guarantee is 5% of the bid.



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Once your credit line has been established with Indemnity, you can be sure of getting bonds on future jobs without delay. In addition, because of Indemnity's low bond rates, no one will be able to outbid you on bonds. This is vitally important, for quite often a job goes for the difference in a bid made possible by low, *preferred* bond rates.

See your Indemnity Agent for all the details. If you don't know him, write us. We'll be happy to introduce you.

Ask your Agent for a copy of Indemnity's Contractors' Bid Book... use it at your next letting.

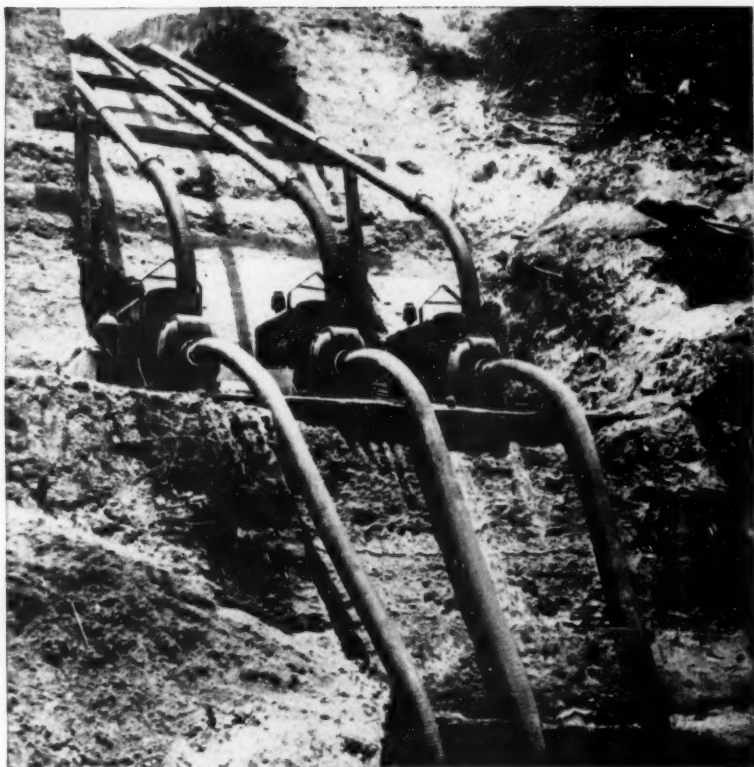
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Taking it on the chin—without grunting or groaning. Here are Barnes Pumps working a really tough job in South America. With overhaul shops hundreds of miles from the job, the contractor had to have pumps that would stay on the job without "time out" for repairs. That's where Barnes Pumps outshine all others.

BARNES "33,000 FOR 1" PUMPS NOT ONLY "TAKE IT" BUT KEEP DISHING IT OUT ON THE TOUGH JOBS!



Got a tough pumping job? Give it to Barnes Automatic Centrifugals and watch 'em walk off with the load! Watch them "put out" day in and day out—year after year. Watch them pump 33,000 gallons of water on each gallon of gas! Watch how they stand up without overhaul! Then you will see why Barnes Self Primers are first in the minds of construction men who want the best in pumps.

The Barnes Line is complete—with capacities ranging from 4,000 to 90,000 G. P. H. — with choice of either Electric, Diesel, Gasoline, or Pulley Drive.

BUY THE BEST • • • BUY BARNES



» IS OCCUPATIONAL safety best achieved with or without government intervention? This was the basic question which lay behind the arguments presented during hearings on two accident prevention bills which were considered recently by a Senate subcommittee on health.

The A.G.C., holding to the line of thought that industry has made much progress and will continue to do so without federal legislation, issued the following for the committee's record:

"The association strongly recommends to its members that they continue to improve their planned programs to prevent accidents on their projects and voices vigorous opposition to legislation by Congress for supervision of industrial safety regulations, on other than federally-financed projects, by agencies of the federal government, for the reasons that such legislation would be an unwarranted assumption of authority properly vested in the states, and that industry can carry out more effective safety measures voluntarily under state supervision."

Accident Prevention Bureau, Federal Safety Aid Proposed

- Grant-in-Aid System Would Be on 75-25 Basis
- Industry Says Safety Best Achieved Locally

This statement is the resolution on industrial safety adopted by the A.G.C. 1952 convention.

Subject of the committee hearings were the Murray bill, S. 2714, and the Humphrey bill, S. 2325. The Murray measure would establish a federal grant-in-aid system to benefit state labor agencies which would be required to administer safety laws under methods prescribed by the Secretary of Labor in Washington. The funds would be allotted by the Secretary of Labor to the various states on the basis of "(1) the population, (2) the number of wage earners, (3) the special hazards in industry, (4) the number of workers afforded protection . . . by the State law and the cost of effective administration of such

laws, and (5) the financial needs of the respective States." Allotment of funds would be on a 75-25 matching basis with the federal government providing the larger share. Each state would be required to put up at least \$15,000 annually, if it sought federal aid.

The Humphrey bill would establish a Bureau of Accident Prevention in the Department of Labor. The bureau would be headed by a director whose principal duty would be to investigate industry conditions and to develop safety practices.

Accident Prevention Boards for each industry would also be established "to make and modify such rules and regulations for the elimination of unsafe and unhealthful conditions . . . in

"BERG" CONCRETE SURFACERS



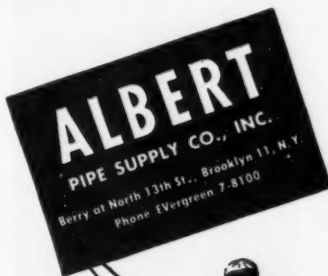
"Berg" Concrete Surfacers are extensively used for surfacing and finishing applications on all types of concrete construction.

Various interchangeable Heads and Attachments are available for grinding, wire brushing, sanding and polishing applications.

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SURFACING MACHINERY CO.**
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FACTORY PACKAGED
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FAST, SIMPLE

Immediate Installation
by one unskilled man. 2 1/2
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Larger sizes can be
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the industry affecting commerce for which it is appointed, and for the construction, repair, inspection, and maintenance of establishments in such industry . . ."

Industry spokesmen claimed that this proposed safety legislation is contrary to what should be done and what is being done to reduce industrial accidents. Accident prevention is a local problem, they stated, which can be solved by the employer, employee and local and state authorities rather than by some remote federal agency.

Labor union and government officials who favored either one bill or both stated that there was a need for uniform safety rules pertaining to all industries in the nation and that voluntary standards are too often ignored. The Department of Health opposed the Humphrey bill which "would tend toward confusion between federal and state responsibilities and between health and labor agencies . . ." and favored the Murray bill which, it claims, aims to assist the states in developing "and promoting standards through voluntary means."



Boston Firm Gets Permanent Symbol of '33 Award

For winning the highest safety honors in the A.G.C.'s 1933 contest, the Aberthaw Co., of Boston, was presented and held in its possession for a year, the silver Goble Cup. To show that this coveted trophy had been gained but lost, the national associa-

tion recently issued permanent plaques to previous winners. Here, William Harlow of the Aberthaw firm receives its Goble Cup plaque from N. B. O'Connell (right), vice president of the A.G.C. of Massachusetts, during a ceremony held for the occasion.

Self-Raising Tower-Hoist

THE INDUSTRY'S MOST VERSATILE

- Picks itself up • Easily extends
- Lifting heights up to 94 feet
- Single or Double Drum Hoists
- Platform speed—100 ft. per min.
- Lifting capacity—2,500 lbs.

Optional Equipment: Gin Pole Assembly, "Chicago" Boom, Tip-Over Bucket, Truck Mounting, Interchangeable 10' Extensions.

**CONSTRUCTION MACHINERY COMPANIES
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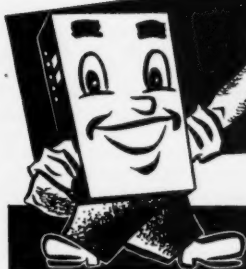
Indirect Cost of Accidents

The Accident:—The platform of an 80-foot high double-width hoist tower carrying a concrete bucket 4 floors up to a hopper platform on a building site became stuck. The hoist engineer lowered the load 3 feet and then gunned it. Two of the taut guy lines snapped under the strain and the tower collapsed. A workman waiting to unload the concrete was struck by a falling board and knocked into the hopper.

Direct Cost:—\$540 for first aid, doctor's fees and hospital cost. Proximate results: Top half of the damaged tower had to be replaced. Two loads of ready-mix concrete were lost. There was loss in time and money to replace and train a new hoist engineer. In addition, there was time lost by 22 men on the job and overhead expense continued while there was delay in work.

Indirect Costs:—Estimated at \$2,220—4 times the direct cost.

Prevention:—Inspect tautness of the guy lines, adjust them accordingly and keep the guides in the hoist tower properly greased.



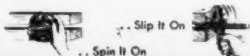
UNIVERSAL CONCRETE ACCESSORIES "TOPS" IN CONCRETE FORMING

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FORM TIES

SPIROLOC Form Ties Standard

5000 to 30,000 lb. Form Ties
for $\frac{3}{8}$ " to 1" threaded tie rod.
Furnished with either Handle or Nut Type
Washers



SPIROLOC Form Ties Spreader Type



The Best "All Around" Tie In the Industry
Provides 5,000 to 30,000 lb. form ties

TWISTY Form Ties



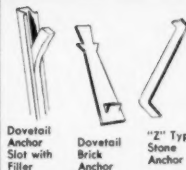
A Combination Form Tie
and Positive Spreader
Breaks-off 1" back of the
wall face.

The FORM CLAMP



Pro-
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holding power
with The Sure
Grip
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BUILDING SPECIALTIES



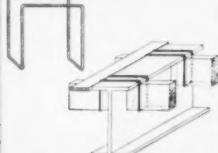
Dovetail
Anchor
Slot with
Filler
Dovetail
Brick
Anchor
'Z' Type
Stone
Anchor

SOFFIT SPACER



BEAM CLAMP

WIRE BEAM SADDLE



WIRE BEAM SADDLES IN PLACE

BAR SUPPORTS



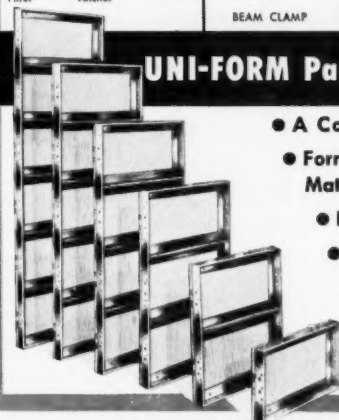
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- A Complete System—always Automatically accurate.
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• BOSTON, MASS., 51 Barnstable St.

Service Wherever You Build...Coast-to-Coast

West Texas Chapter Receives Charter

• Thirty-five Building Contractors Are Charter Members

» THE WEST TEXAS CHAPTER received its charter from The Associated General Contractors of America during a ceremony held Mar. 29 in Abilene.

Composed entirely of building contractors, the chapter has a territory covering 81 counties in Western Texas, touching the borders of Oklahoma, New Mexico and Mexico. The chapter's 35 charter members come from every part of this far-flung area.

Burt L. Knowles, engineer adviser of the A.G.C. national staff in Washington, D. C., made the formal presentation of the charter during the meeting attended by about 70 persons from member firms.

Other honored guests were Fred Fisher, a national director and presi-

dent of the Houston Chapter; Loy W. Duddleston, executive secretary of the Houston Chapter; and Maurice Brooks, Abilene attorney.

Officers of the chapter are Frank Cannon, Templeton-Cannon, San Angelo, president; Robert E. Maxey, Robert E. Maxey Construction Co., Lubbock, vice president, and Ed Balfanz, Balfanz Construction Co., Abilene, secretary-treasurer.

Appointed executive secretary of the new chapter is Hugh Welch, San Angelo, a former newspaperman.

Other charter members are: From Abilene—Paul M. Bonine, B. F. Horn Co., E. M. Lambert & Son, Albert A. McAlister, Boyd McDaniel, M & H Construction Co., C. B. Oates, Rose Construction Co. and Rufus Sivley.

From Lubbock—B. M. F. P. Construction Co., R. H. Bundock Construction Co., W. G. McMillen, Carl E. Maxey, Sampson Bros. Construction Co., Tidmore Construction Co., Tisdell & Newton, Walden, Fulton & Payne, Tom G. McAbee and Gilstrap Construction Co. From San Angelo—Evans & Taylor, Joe B. Tharp and Warner Construction Co. From Odessa—Bunch Construction Co., King Construction Co., Howard Mankins Construction Co., Newton Construction Co. and Sneed Construction Co. From Midland—Houston Hill and Pat N. Stanford. Others are B. C. D. Construction Co., Ballinger; J. L. Hair & Sons Construction Co., Wichita Falls; and J. D. Jones Construction Co., Big Spring.

Alaska Services Expanded

To aid Alaskan construction and development plans, the Alaska Chapter, A.G.C., has begun a territory-wide program to assist contractors and labor representatives with wage, price and material controls, D. L. Cheney, recently re-elected president of the unit, announced.

The chapter's program for this year will emphasize dissemination of infor-



D. L. Cheney

mation on wage and price regulations and include a series of meetings at major construction projects throughout the territory. Chapter representatives will meet with labor and management representatives to handle specific problems on the smaller job sites.

To better handle construction problems arising in the interior of Alaska, Vic Guns, assistant chapter manager, reopened the group's Fairbanks office this month and will remain there until the close of the outdoor season.

Other officers re-elected by the chapter are A. M. Strandberg, vice president; and John J. Grove, secretary-treasurer. Directors for the new year are M. P. Munter, D. W. Clayton, C. William Hufeisen and G. E. Leffer. Larry Moore remains as chapter manager with Mr. Guns as his assistant.

Mr. Cheney is vice president of S. Birch & Sons, veteran A.G.C. contractors in Alaska, with offices in Seattle and Great Falls, Mont.

Georgia Firm 100 Years Old

A brick chimney, bleak reminder of a once flourishing Confederate powder factory, still stands today in Augusta, Ga., where it was built three generations ago by an A.G.C. member's grandfather who founded the construction company in the early 1850s.

Known for many years as the Bowe Contracting Co., Inc., of Augusta, its name was recently changed to the Southern Roadbuilders, Inc., when its president, William F. Bowe, Jr., retired from active participation in the 100-year-old company. He will remain, however, as chairman of the board in an advisory capacity.

His grandfather, Robert J. Bowe, a builder and brick manufacturer, came to Augusta in the early 1850s and started the business. The brick chim-

ney that still stands is all that is left of the South's chief source of powder.

Afterwards, the grandfather helped build the first steamer that carried cotton from Augusta to Savannah for shipment to England. In 1886 Robert J. Bowe and his son William F., Sr., were subcontractors for the brickwork in the construction of the state capitol in Atlanta. After the grandfather died in 1893 William F., Sr., continued to build waterworks and streets until William F., Jr., took over the business in 1925.

In 1950 Mr. Bowe was joined by his brother Robert F. Bowe and the firm was first incorporated. William F. was named chairman of the board, his brother became secretary and treasurer and Charles Davant, president.

Southern Roadbuilders, Inc., will retain the same personnel as the old Bowe Contracting Co.

GENERAL CONTRACTOR

Having done a gross in excess of 9 million in 8 years. Due to press of other business is desirous of selling all or major part of General Contracting business dealing entirely with Oil, Utilities, and other private industry in a territory of the Gold Coast of Texas.

Equipment of standard make and in good condition. Address—

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Telephone 2-3212
Nite 5-9983

» MANUFACTURERS and distributors of construction equipment agree that supply of their wares is currently good and will get progressively better during 1952. There is even a remote possibility of a surplus.

These points were brought out during Joint Cooperative Committee meetings of the Associated Equipment Distributors-A.G.C. and the Construction Industry Manufacturers Association-A.G.C., last month, in Chicago.

Manufacturers stated that, barring a major setback in steel production, should there be substantial cancellations of orders by contractors and disposal of stocks of new equipment by the government, the construction equipment industry could even find itself tackling problems of over-supply later on in the year.

Cause for the improved situation was attributed to the freer flow of controlled materials which are now reaching equipment and repair parts producers in larger and steadier volumes. However, it was pointed out that there will be continued delay for some repair parts for machines made 10 or more years ago.

A.E.D. representatives reported that steps were being taken with the Army to revise the third party equipment rental contract form No. 57, used in connection with cost-plus-a-fixed-fee contracts. Adjustments in Ceiling Price Regulation 105, covering the sale of used equipment, are also being sought, they stated.

At both meetings A.G.C. representatives were offered cooperation in getting a bill through Congress which would offset the decision in the Wunderlich case which virtually deprives a contractor of the right to judicial

Construction Equipment Supply Improving

• A.G.C. Meets with A.E.D. and C.I.M.A. in Chicago

review of disputes with federal contracting officers.

It was agreed that the construction machinery repair parts books should be reviewed in the near future with an eye to possible improvements, keep-

ing in mind the 1949 recommendations of the A.G.C. and A.E.D. C.I.M.A. pamphlets on the importance of construction machinery to the defense effort were discussed at length and highly praised by A.G.C. members.



WELLMAN
easy handling of
large stones

- Those big stones won't slip from the Wellman Stone Grab. Four-part closing cable reeving develops tremendous closing force on stones. Model shown has 5-ton capacity, 4½ foot jaw spread. Other capacities available.

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THE WELLMAN ENGINEERING COMPANY

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STONE AND WOOD GRABS • CLAMSHELL, DRAGLINE, CUSTOM-BUILT BUCKETS

More Metal for Machinery

Third quarter allocations for the production of construction machinery will show a better balance of steel, copper and aluminum than in any other quarter since the start of the Controlled Materials Plan.

This announcement was made by an official of the National Production Authority during the April 22 meeting of the Construction Machinery Industry Advisory Committee.

Machinery producers were also advised that further applications for second quarter supplemental allotments will be considered provided there is a real need for the materials.

Main topic of the meeting was the

CONSTRUCTIVE SUGGESTIONS

Typical Ways in Which NAYLOR Light-weight PIPE Serves Contractors



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WATER LINES



VENTILATING PIPE



HIGH PRESSURE AIR LINES



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Naylor Pipe Company
1280 E. 92nd St., Chicago 19, Ill.
New York Office:
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EQUIPMENT

revision and simplification of Order M-43 which applies to construction machinery.

The new order will eliminate filing quarterly production and delivery schedules, but will retain the clause permitting the manufacturers to refuse rated orders in excess of 50% of base period or current production, whichever is greater.

NPA told the committee that fiscal 1952 military requirements were less than those in 1951 and it was pointed out that the number of priority ratings, including direct military demands, were gradually decreasing.

Diesels Need Clean Air, Fuel

Clean fuel and air are essential to the maximum efficiency of the Diesel engine, which powers so many machines used on construction jobs.

The International Harvester Co. of Chicago offers these points:

- Buy the grade of fuel recommended by the manufacturer.
- Store it in an underground tank where temperatures are more constant and there is less condensation.
- The tank should have a drain at its base to remove water and sediment.
- Tank filler neck should have a cap and filter, and tank hose should be protected from dirt and water.
- Better to empty small containers of fuel on the ground or use contents to wash parts than to return it to the storage tank. Small quantities of gasoline and kerosene often found in cans and buckets can contaminate the entire fuel supply in the tank.
- Accumulation of water in engine trap usually indicates fuel is being contaminated in storage tank.
- Check engine filters regularly. Low readings on fuel pressure gauge usually indicate stopped-up filter.
- Air cleaners, designed by the manufacturer, are adequate. It is erroneous to think that extended air cleaner pipes smother the engine.
- Under dusty operations, air cleaner screens should be washed in kerosene frequently and oil trays should be removed and washed.
- Dirty air can enter at the connection between the air cleaner and the intake manifold, and between the intake manifold and the cylinder head. Water or kerosene squirted at these spots and sucked in indicates an air leak and need for repair.

Order No.	MANUALS	Per Copy	Per Dozen	Per 100
1.	A.G.C. Manual (Contains documents listed below: Nos. 3-50, inclusive, and Nos. 54, 55, 36, 50a, 37, 38)	\$3.00	\$30.00	_____
2.	Accident Prevention Manual (Revised and enlarged 1940)	3.00	30.00	\$210.00

3. Standard Contract for Engineering Construction issued by the Joint Conference on Standard Construction Contracts.....	.25	2.75	20.00
4. Standard Building Contract of the American Institute of Architects—Revised 6th Edition50		47.50
5. Subcontract form—American Institute of Architects—Revised 5th Edition.....	.10		9.50
7. Standard Government Contract.....		.50	4.00
8. A.G.C. Cost Plus a Fee Contract.....	.10	.50	2.50
9. A.I.A. Cost Plus a Fee Agreement between Contractor and Owner—Revised 6th Edition10		
11. Equipment Rental Agreement.....	.10	.50	3.00
12. A.G.C. Proposal Form.....	.10	.50	3.00

13.	A.I.A. Accounting Form #701 "Change Order"20	1.80	12.00
14.	A.I.A. Accounting Form #702 "Request for Partial Payment"20	1.80	12.00
15.	A.I.A. Accounting Form #703 "Certificate for Payment"20	1.80	12.00
16.	Building Estimate Summary10	.50	3.00
17.	Job Overhead Summary10	.50	3.00
20.	Contractors' Equipment Ownership Expense (Itemized tables of ownership expense elements with instructions for application. Revised 1949)	1.00	10.00	65.00
21.	Equipment Record—Bond paper10	.50	3.00
22.	Equipment Record—Cardboard10	.50	3.50

24. Standard Pre-Qualification Questionnaires and Financial Statements for Prospective Bidders—Complete in Cover Engineering Construction (For Qualifying Before Bidding)20	1.80	12.00
25. Standard Pre-Qualification Questionnaires			

Order No.	INVESTIGATION OF BIDDERS (Continued)	Per Copy	Per Dozen	Per 100
	and Financial Statements for Prospective Bidders—Complete in Cover. Building Construction (For Qualifying Before Bidding)	\$.20	\$1.80	\$12.00
26.	Standard Questionnaires and Financial Statement for Bidders—Complete in Cover. Engineering Construction (For Qualifying After Bidding)20	1.80	12.00
27.	Standard Questionnaires and Financial Statement for Bidders—Complete in Cover. Building Construction (For Qualifying After Bidding)20	1.80	12.00
28.	Financial Statement and Questionnaire for Credit Transactions20	1.80	12.00

29. Insurance Check List.....	10	1.00	5.00
30. The Functions of a General Contractor...	10	.75	6.00
34. A.G.C. Governing Provisions.....	10	.50	5.00
35. A.G.C. Code of Ethical Conduct.....	10	.50	3.00
36. Concrete Mixer Standards.....			Single copies—no
36a. Contractors' Pump Standards.....			charge; quantity
37. A.I.A. Standard Form of Arbitration Procedure			prices on applica-
38. Suggested Guide to Bidding Procedure...			tion.



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| 39. | A.G.C. Cardboard Seal (red and black) | |
| | 24" dia. | 50 |
| 40. | A.G.C. Metal Seal (red and black) 10" dia. | 40 |
| 41. | A.G.C. Decalcomania Seal (red and black) | |
| | a. 10" dia. | 20 |
| | b. 5" dia. | 10 |
- Metal Seals and Decals: 20% discount for orders of more than 50; 40% discount for orders of 200 or more.**

Form SS1: Application for Employment; Form SS2: Employees' History Record; Form SS3: Employees' Employment and Earnings; Form SS4: Payroll. List of prices and styles will be furnished to A.G.C. members on request.

USE THE CONVENIENT COUPON TO PLACE YOUR ORDER

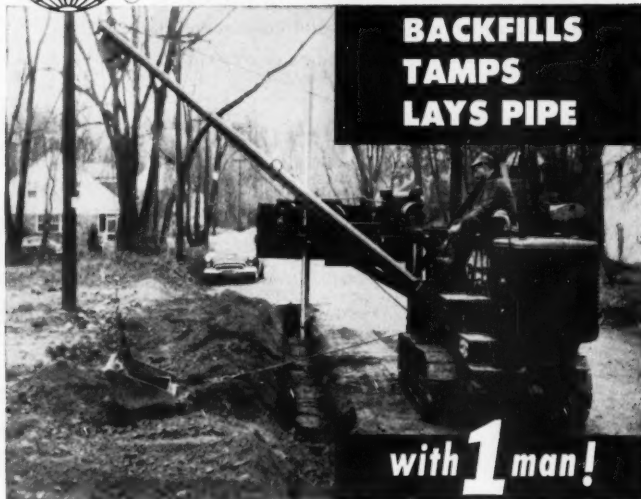
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87



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TAMPS
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with 1 man!

Tops for water, gas, sewer, telephone and power lines — leak clamp openings — highway and airport drainage . . .

LOOK AT THESE ADVANTAGES

- One-man operation — cuts labor cost, cuts need for air and hand tools.
- Fills — as it tamps — as it travels — 24 speeds in either direction.
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- Lays pipe—pulls sheathing—sets valves—handles headache ball, etc.
- More maneuverable — fewer traffic hazards — better public relations.

For complete information on the CLEVELAND 80 see your local distributor or write for this fully illustrated folder of facts and specifications.



Filling—tamping—traveling simultaneously.



Laying 8" main and pulling crossings.



No jockeying into traffic lanes here!

NEW EQUIPMENT • MATERIALS

Scrapers—Caterpillar Tractor Co., Peoria 8, Ill. Two new scrapers for use with DW10 tractor are No. 10, with 7 cu. yd. struck capacity and 9 cu. yds. heaped, and No. 15 with 10 cu. yd. struck capacity and 13 cu. yds. heaped. They are similar in design, having flat, double-bottom bowl of high-tensile steel, "stinger" blade with reversible cutting edge, cable rigging providing for positive loading and ejection, wheels turning on tapered roller bearings, air brakes synchronized with tractor brakes.



Caterpillar No. 15 scraper

Masonry Water Repellent—Williams Form Engineering Corp., 1501 Madison Ave., S.E., Grand Rapids 7, Mich. "Crete-Driseal" contains silicone resin recently developed by Dow Chemical Co. It is applied over masonry surface in liquid state. It does not fill masonry pores, but coats pore lining and opening edge, permitting masonry to absorb air and reducing danger of brick crumbling due to excessive dryness. It seals in free-lime in concrete floors, preventing it from drawing oil out of paint. It can be applied to green cement and precasts as it seals in moisture. It must be used before oil base and after cement base water mix paint. When applied after water mix paint, it penetrates through and beyond paint, waterproofing wall and making outside surface of paint resistant to staining. Folder describing product available from manufacturer.

Mobile Radio Receiver—Motorola Communications and Electronics Division, 4545 W. Augusta Blvd., Chicago 51. Simplified radio communications receiver for use with 2-way mobile radio systems uses only 14 standard tubes of 5 types. Components and wiring have been simplified so that all terminals and service points are available without removing or relocating other components or wiring. New unit is interchangeable with previous models.

THE CLEVELAND TRENCHER CO.

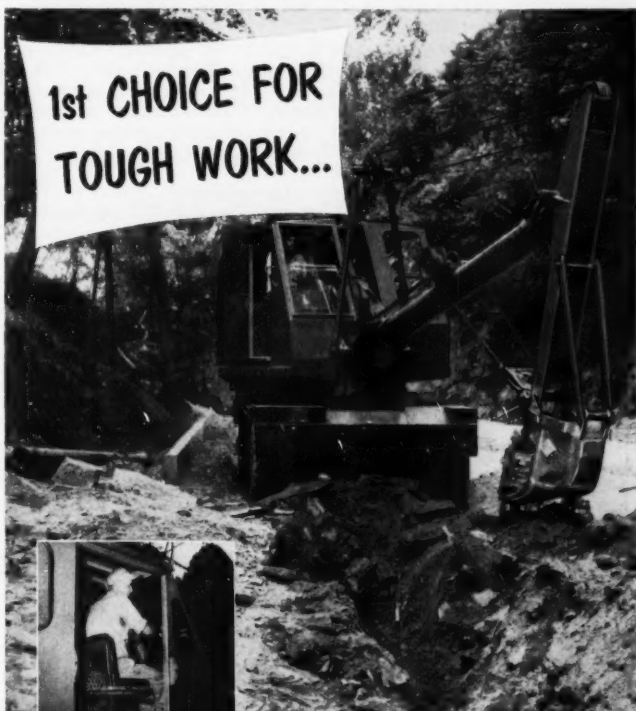
20100 ST. CLAIR AVENUE

CLEVELAND 17, OHIO

Pumps—Rice Pump & Machine Co., Grafton, Wis. Three new self-priming centrifugal pumps, 20M, 30M and 40M, conform to A.G.C. standards. They are powered by air-cooled gasoline engines. Design includes cartridge-type shaft seals, open-type non-clogging impellers, hardened steel wearing plates, built-in check valves and straight-line flow of water through suction openings to impeller. They are available mounted on skids, on 2 pneumatic-tired wheels or on steel wheels.

Diesel Engine—Nordberg Manufacturing Co., Milwaukee 1. Three-cylinder engine is rated at 30 to 45 h.p. within speed range of 1,200 to 1,800 r.p.m. Known as 4FS3, it has 4½" bore and 5¼" stroke and is 4-cycle, vertical, mechanical-injection diesel engine. It is available as electric generator set, pumping unit and, with clutch or stub shaft power take-off, for direct connection or belt drive. It is also available with heat exchanger cooling for marine auxiliary applications. As generator set it is furnished in direct or alternating current models from 20-30 kw in all standard voltages, 50- or 60-cycle. Built with side-suction, 2 ball-bearing pumps, with statically and dynamically balanced impellers, 4FS3 pumping unit has capacity of 500 to 3,000 g.p.m. at 20' to 220' head. With direct or clutch power drives, engine is adaptable for replacement engine in hoist, small shovel, etc.

Loader—Efficient Equipment, Inc., 1621 W. Hastings St., Chicago 8. "Hykap" loader, which is adjustable to any size dump truck, consists of attachable shovel or magnet, arms and hydraulic equipment. It is mounted on rear of truck body and is operated by controls on top of truck cab or from auxiliary controls on side of truck. It is made ready for operation by engaging fork attached to truck transmission and by slipping 4-fingered attachment over steering wheel. Hydraulic arms of loader work directly off power take-off. Complete set of controls, including clutch, gas pedal, steering wheel and gear shift, is located on top of cab. Levers to open and shut shovel and to operate hydraulic cylinders are located on top of cab. Operator can drive truck and operate loader from his seat on top of cab. Shovel handles 1 cu. yd. of loose material at time.



Operator Ernest Duff likes MICHIGAN'S air controls and the accessibility of engine and clutches.

it's **MICHIGAN**
exclusively for James
Armour Excavating Co.

Owner of eight MICHIGAN Excavator-Cranes, this Philadelphia contractor is for MICHIGAN'S 100%. Why? His first MICHIGAN convinced him that they have what it takes.

In a housing project, a MICHIGAN Truck Hoe removed and re-laid 1,000 feet of 6-inch water line at a lower depth to accommodate a new street grade. The MICHIGAN trenched down to hard rock. The rock was then blasted and the MICHIGAN completed the trench and re-laid the water line, finishing the entire job well within schedule. Says owner Jim Armour: "We can handle these jobs at lowest cost with a MICHIGAN."

Whether or not your work is in rock . . . next time you need an excavator-crane . . . investigate MICHIGAN ¾-yd. and ½-yd. excavator-cranes . . . your best buy!

MICHIGAN POWER SHOVEL COMPANY
485 Second Street, Benton Harbor, Michigan, U.S.A.

Power-Line Warning Device—*Electro-Alarm Safety Devices, 745 Pleasant, Fresno, Calif.* "Electro-Alarm" for mounting on power shovels and cranes warns operator of proximity to power lines. Proximity detector mounts on boom end. Other units, consisting of master control unit, proximity warning horn and trouble-check flasher (which warns of any disruption in warning system) can be

mounted wherever desired. It can be set for any working distance. It operates automatically. It runs off starter battery or lighting circuit from any rig.

Tractor-Shovel—*Frank G. Hough Co., 819 Seventh St., Libertyville, Ill.* Model HR 4-wheel-drive "Payloador" has one cu. yd. bucket with 60 h.p. diesel or 54 h.p. gasoline power optional.

It is equipped with large pneumatic tires. Features are rear-wheel steer with power booster and short wheel base. It has 4 speeds in both directions. Fingertip-controlled hydraulic power raises and lowers and dumps and closes bucket. It has automatic digging action independent of forward motion. Automatic quick tip-back of bucket is provided. Operator's seat is located high and forward. Twin hydraulic boom rams are double-acting as is ram that dumps and closes bucket. Bulldozer blade, crane hook, fork lift and snow plow attachments are available.

Masonry Drill Bit—*New England Carbide Tool Co., Cambridge 39, Mass.* Carbide-tipped drill bits are designed for drilling holes $3\frac{1}{4}$ " to 5" diameter in hard masonry. They are one-man operated.

Loader—*Athey Products Corp., 5631 W. 65th St., Chicago 38.* "Force-Feed HiLoader" is stockpile-windrow loader. It features full-floating feeder suspended from 2 coil springs and pivot, allowing paddle blades to "float" over contours of windrow. Loader has auger gather-feeder. Spiral blades extend to moldboards of gather. Conveyor belt is 30" wide and is cleated to handle snow, sand and other light materials as well as heavier earth, rock, etc. Swiveling discharge conveyor can be directed 45° right or left of center and is controlled hydraulically from operator's seat. Operator's platform is on left side. All operations are controlled with hydraulic power, with levers in easy reach of operator. Ford 95 h.p. 6-cylinder engine powers unit, which can travel up to 19 m.p.h. Loading speeds range through 4 gears from 0.3 to 1.92 m.p.h. Machine has short wheelbase and needs 23' for non-stop turn. Entire unit is 34'7" long. Loader can load up to 25 cu. ft. of snow a minute and up to 10 cu. yds. a minute in other materials.



The Seftmann Archive

The NEW LOOK First Invaded Business Offices in the 1860's

Personal surety after being practiced for 600 years in England was supplemented by the first surety company in 1840. This idea spread to the United States where a similar company was incorporated in 1865, for the purpose of insuring "the fidelity of persons holding positions of trust." The organization was short-lived and ceased writing business within a year. The Superintendent of Insurance in New York made this comment: "It is to be regretted that this experiment was not more thoroughly tested, as it met a great public want and an acknowledged necessity of business. Other institutions will doubtless soon introduce and practice both fidelity and guarantee insurance on some stable and successful basis." This prediction proved correct and within a few years, a number of companies commenced writing fidelity and surety business until today there are 75 companies in this field.

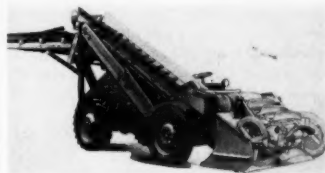
(Third in a series of advertisements tracing the history of the Fidelity and Surety Industry)

Phoenix- London

GROUP

55 FIFTH AVENUE • NEW YORK

PHOENIX ASSURANCE CO., Ltd.
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UNITED FIREMEN'S INSURANCE CO.
THE UNION MARINE & GENERAL INSURANCE CO., Ltd.
LONDON GUARANTEE & ACCIDENT CO., Ltd.
PHOENIX INDEMNITY COMPANY



Athey "Force-Feed HiLoader"

THE CONSTRUCTOR, MAY 1952

NEW LITERATURE

Roof Trusses—*Macomber, Inc., Canton 1, Ohio.* New catalog of structural design information includes basic design format for industrial buildings and information on architectural embellishment of structural frames. Following design analysis are pages of actual structural details drawn to scale, providing essential details of steel buildings and framing plan. Catalog provides safe loading table and covers "Hi-Lo" bay type of steel framing where flat trusses are used.

Cranes, Hoists—*American Hoist & Derrick Co., 63 S. Robert St., St. Paul 1.* General catalog GC-2 covers complete line of American equipment from giant revolver cranes, through locomotive cranes, hoists, material elevators, car pullers and "Crosby" wire rope clips. Catalog is illustrated with on-job photos.

Tractor Attachments—*Caterpillar Tractor Co., Peoria 8, Ill.* Catalog (Form 30182) explains uses and construction of each tractor attachment. Action pictures supplement catalog views. Specifications, drawings and dimensions are provided. It is fully indexed.

Vermiculite Concrete Floors—*Vermiculite Institute, 208 S. LaSalle St., Chicago 4.* Booklet presents concise data on vermiculite-sand concrete as fill over structural floors, as floor slab over supports on relatively close spacing and as slab laid on ground. Also included are specifications for vermiculite concrete floors on ground (with and without radiant heating units) that are topped with sand concrete.

Ditchers—*Gar Wood Industries, Wayne, Mich.* Two catalogs describe Buckeye Models 314 and 303 wheel-type ditchers. Construction and operational features of machines are explained in detail. Specifications are included.

Power Wheelbarrow—*Kwik-Mix Co., Port Washington, Wis.* Bulletin on "Moto-Bug" contains 25 action photos showing machine in operation with hopper body, platform body and fork lift attachment. Detail picture shows construction of machine.

Elevating Tower—*American Tubular Elevator Co., Zelienople, Pa.* Catalog 249 contains complete data on single-well and double-well elevating towers. Specifications are given and

WARCO is the completely versatile motor grader that meets every job requirement from rough cut to finish grading . . . beats deadlines, keeps grading costs down. WARCO is the *only* motor grader whose cab-controlled blade reaches every working position, including 90°, without lost-time manual adjustment.



WARCO MOTOR GRADERS

4D-100 HEAVY DUTY (100 h.p.)

4D-76 GENERAL DUTY (76 h.p.)

Ask your WARCO dealer for a slide-film showing and an on-the-job demonstration



W. A. RIDDELL CORP., Bucyrus, Ohio
BUILDERS OF WARCO MOTOR GRADERS • HERCULES ROAD ROLLERS

rigging diagrams illustrate applications of equipment. Components required for erection of towers having 3,000 lb. or 5,000 lb. live load capacity are described and illustrated. Special concrete-handling equipment which is interchangeable with conventional platform cage and material-handling booms of 1,000-lb. or 2,000-lb. capacity which can be rigged to towers are presented.

Earth-Moving—Euclid Road Machinery Co., Cleveland 17. Revised and enlarged edition of *Estimating Production and Costs of Material Movement with Euclids* contains many charts, illustrations, formulas and reference tables. Although intended for use in making production and cost estimates for Euclid equipment, estimating methods and formulas can be applied to equipment of other makes.

Part 1 covers job analysis and method of estimating production and number of hauling units required for specific job. Part 2 deals with cost estimating. Part 3 contains formulas to determine grade ability, rim pull, engine torque, etc., and several pages of tables with commonly used dimensions, weights and other data.

Lumber—West Coast Lumbermen's Assn., 1410 S.W. Morrison, Portland 8, Ore. 1952 edition of *Where to Buy*, membership directory of West Coast Lumbermen's Assn., includes information on capacity, facilities, species and lumber items manufactured by 297 members listed.

Sidewalk Paving Machine—Dotmar Industries, Inc., 503 Hanselman Bldg., Kalamazoo, Mich. Bulletin 52 describes powered machine which can lay up to 10' per minute of walk. Types of screeds available are sketched, design of machine explained. Action photos show it in operation. Specifications are included.

Roof Deck and Roof Insulation—Zonolite Co., 135 S. LaSalle St., Chicago 3. Vermiculite concrete and its uses in various roof constructions are described in booklet. Physical properties of this concrete and specifications for several types of installation are listed.

Reinforced Concrete Book

New *CRSI Design Handbook*, published by the Concrete Reinforcing Steel Institute, simplifies many problems in designing reinforced concrete structures. Most of computation is eliminated by answers to complex stress and load problems which are all worked out in manual and read directly by reference to tables.

Designs are based entirely upon the 1951 A.C.I. Reinforced Concrete Building Code with a couple of exceptions. All bond computations are based upon deformed bars meeting A.S.T.M. A305-50T at 0.10f_c.

The handbook covers the following subjects: floor systems, columns, footings, retaining walls, area ways. A separate section contains miscellaneous tables and lists engineering diagrams and formulas. Price of the new manual is \$5.00. It may be obtained from Concrete Reinforcing Steel Institute, 38 S. Dearborn St., Chicago 3, Ill.

NO TIME LOST! LOADING OR LAYING ITS LOAD



A STANDARD STEEL
PRESSURE DISTRIBUTOR
GIVES EQUAL CIRCULATION THROUGHOUT
THE SPRAY BAR FOR A
UNIFORM SURFACE
FROM CURB TO CURB
FOR LONGER WEAR

OTHER PRODUCTS OF STANDARD STEEL

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Tools, Street Flushers, Construction Brooms.

STANDARD STEEL PRESSURE DISTRIBUTOR

The Model 424 can be loaded in quick time for a "fast get-away". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering—no time lost in loading—Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

WRITE FOR CATALOG 424



Standard Steel Works NORTH KANSAS CITY, MO

MANUFACTURERS' NOTES

B. F. Devine, vice president and manager of the Construction Machinery Division of CHAIN BELT Co. has become a staff officer of the company to serve it in an advisory and consulting capacity. A. K. Thomas has been appointed manager of the Construction Machinery Division. W. A. Clayton has been made sales manager of the division and J. W. Lendved, director of engineering. W. J. Sparling has been appointed to the newly created position of vice president and manager of Milwaukee operations of Chain Belt. M. G. Jewett has been appointed manager of the Chain and Power Transmission Division. W. C. Messinger, manager of the Ordnance Division, has been elected assistant secretary of the company.

John E. Ehlert, formerly service and parts manager of EUCLID ROAD MACHINERY Co., has been appointed assistant domestic sales manager. G. M. Perry succeeds him as service manager.

Harry M. Frecker has been appointed manager of commodity sales for the Mechanical Goods Division, UNITED STATES RUBBER Co.

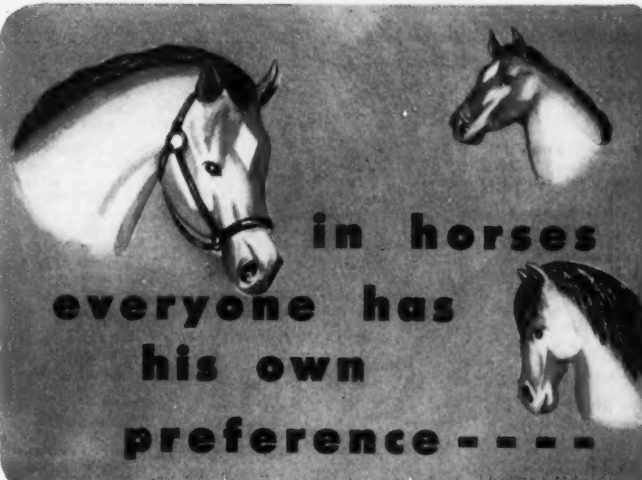
Don J. Phillips has been appointed sales manager of the AUSTIN-WESTERN Co. and J. Arthur Fitzenz assistant sales manager. Robert H. Diller has been appointed assistant advertising and sales promotion manager.

Worthington Pump and Machinery Corp. has changed its name to WORTHINGTON CORP. Because of diversification of company's products, it was felt that continued reference to "pumps" in corporate name was misleading, according to H. C. Ramsey, president.

The UNIVERSAL FORM CLAMP Co. has adopted "Mr. Uni-Form" to handle the duties of trade mark on all advertising and promotional material. "Mr. Uni-Form's" appearance is characteristic of the panels manufactured by the company and was selected as trade mark because of his clever method of representing product identification.

Obituary

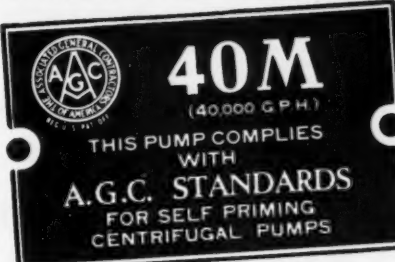
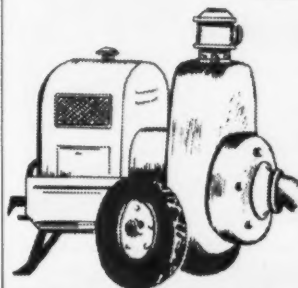
Frank Elliott Guy, who retired as general traffic manager of Universal Atlas Cement Co. in 1945, died April 14. He had been in the traffic department for 39 years.



in horses
everyone has
his own
preference - - -

BUT WHEN BUYING PUMPS

*The
Preference
is . . .*

Pumps that wear the A. G. C. label are "Thoroughbreds". That is, they must meet certain basic standards of pump performance set up by the Pump Bureau and approved by the A. G. C. Members of the Pump Bureau, reliable pump manufacturers, meet the standards in their products which are identified by the official A. G. C. Standard Plate. Listed below are Pump Manufacturers that guarantee these standards in the pumps they sell you.



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THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC.
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WORTHINGTON PUMP & MACH. CORP. Construction Equipment Division Dunellen, New Jersey	C. H. & E. MANUFACTURING CO. Milwaukee, Wisconsin	MANLOW PUMPS Ridgewood, N. J.
LEYMAN MFG. CORP. Cincinnati 2, Ohio	CHAIN BELT CO. Milwaukee, Wisconsin	HOVO ENGINE CO. Lansing, Michigan
BARNES MANUFACTURING CO. Mansfield, Ohio	CONSTRUCTION MACHINERY CO. Waterloo, Iowa	RICE PUMP & MACHINE CO. Grafton, Wisconsin
	THE GORMAN-PUPP CO. Mansfield, Ohio	ESSICK MANUFACTURING CO. Los Angeles, California

ADVERTISERS' PRODUCTS

Manufacturers' addresses are listed on page 98

Aggregate (Light-weight)
Great Lakes Carbon Corp.,
Building Products Division

Air Entraining Agents
A. C. Horn Co.

Asphalt Plants (Portable)
Barber-Greene Co.
Iowa Mfg. Co.
Standard Steel Works
White Mfg. Co.

Asphalt Tile
Coleman Floor Co.

Axles (Truck)
Eaton Mfg. Co., Axle Division

Backfillers
Bucyrus-Erie Co.
Cleveland Trencher Co.
Graddall Division
Parsons Co.

Batchers
Blaw-Knox Division
Construction Machinery Co.
Heltzel Steel Form & Iron Co.
C. S. Johnson Co.

Bearings (Anti-Friction, Tapered Roller)
Hytatt Bearings Division
Timken Roller Bearing Co.

Bins
Blaw-Knox Division
Heltzel Steel Form & Iron Co.
Iowa Mfg. Co.
C. S. Johnson Co.

Bits (Detachable Drill)
Timken Roller Bearing Co.

Blades (Grader, Maintainer, Snow Plow, Bulldozer, Scarifier)
Shunk Manufacturing Co.

Blasting Accessories
American Cyanamid Co.

Bridges
American Bridge Co.
Armco Drainage & Metal Products

Buckets (Clamshell & Dragline)
Blaw-Knox Division
Bucyrus-Erie Co.
C. S. Johnson Co.
Wellman Engineering Co.

Buckets (Concrete)
Blaw-Knox Division
Construction Machinery Co.
Heltzel Steel Form & Iron Co.

Building Papers
Sisalkraft Co.

Buildings (Steel)
Allied Structural Steel Cos.
American Bridge Co.
Armco Drainage & Metal Products
International Steel Co.
Macomber, Inc.
Truscon Steel Co.

Bulldozers
Bucyrus-Erie Co.
R. G. LeTourneau, Inc.

Car Pullers
Clyde Iron Works

Carpet
Coleman Floor Co.

Cement (Common and Special)
Lehigh Portland Cement Co.
Lone Star Cement Corp.
Marquette Cement Mfg. Co.
Universal Atlas Cement Co.

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Trinity White, General Portland Cement Co.
Universal Atlas Cement Co.

Clamps (Hose)
Dixon Valve & Coupling Co.

Compressors
Allis-Chalmers Co.
LeRoi Co.

Concrete Curing Material
A. C. Horn Co.
Sisalkraft Co.

Concrete Mixers, Pavers, Tampers
Chain Belt Co.
Construction Machinery Co.
Foote Co.
Jaeger Machine Co.
Knickerbocker Co.
Koehring Co.
Kwik-Mix Co.
T. L. Smith Co.
Worthington Corp.

Concrete Vibrators
Concrete Surfacing Machinery Co.
Electric Tamper & Equipment Co.
Independent Pneumatic Tool Co.
Mall Tool Co.
Master Vibrator Co.
Vibro-Plus Products, Inc.
White Mfg. Co.

Conveying Machinery
Barber-Greene Co.
Chain Belt Co.
Iowa Mfg. Co.
Link-Belt Co.

Cranes
Austin-Western Co.

Produce Better Concrete Faster at More Profit for you... with

Mall Concrete Vibrators



Couple better concrete through stiffer mixtures, using less cement... to faster operations from job to job, and you have the ideal profit formula, achieved with Mall Concrete Vibrators.

Mall Vibrators consistently deliver better concrete through better compaction, increased density and water-tightness. Such heavy-duty features as the rugged power plant, a steel wire vibrator shaft and an internal housing liner with a continuous bearing surface are contributing factors. But, combine these well-engineered features with Mall's lighter weight and easy portability, and you complete the picture. You not only produce better concrete at profitable savings in cement — you produce better concrete faster at savings in time and labor. Double savings that meet competition, yet put more profit in every contract. Write today for information about Mall gasoline, electric and pneumatic concrete vibrators.

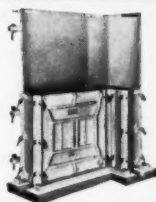
40 Factory-Owned Service Warehouses, Coast To Coast, To Serve Our Customers and Thousands Of Dealers.

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Save manpower time and material



When placing concrete, use this nationwide Form Rental and Engineering Service to increase profits, reduce costs.

Standard units of Economy Forms fit most jobs. But where needed, special forms can be built to specification.

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Trucon Steel Co.

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Link-Belt Co.

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All widths, lengths, and thicknesses; accurately punched to fit your make of machine.

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Established 1854
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TO FIT THE
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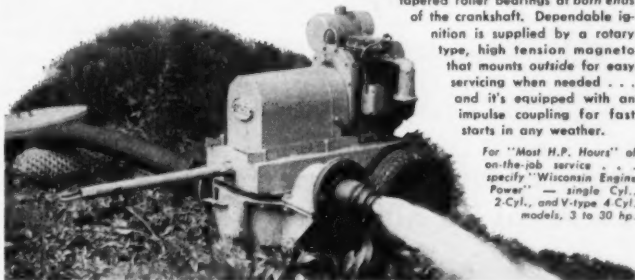
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TO FIT THE
JOB**

WISCONSIN- POWERED Rex Pump

Designed to meet de-watering requirements in which large amounts of solid materials are present, this 4" Closed Diaphragm Rex Pump will handle up to 6,000 gals. per hr. on a 10-ft. suction lift. It's built by Chain Belt Co., Milwaukee, and powered by Model AKN 4-cycle single cylinder Wisconsin AIR-COOLED Engine, turning up 3 3/4 hp. at 2100 rpm.

Like all Wisconsin Air-Cooled Engines, from 3 to 30 hp., this rugged little power unit runs on Timken tapered roller bearings at both ends of the crankshaft. Dependable ignition is supplied by a rotary type, high tension magneto that mounts outside for easy servicing when needed . . . and it's equipped with an impulse coupling for fast starts in any weather.

For "Most H.P. Hours" of on-the-job service . . . specify "Wisconsin Engine Power" — single Cyl., 2-Cyl., and V-type 4-Cyl. models, 3 to 30 hp.



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World's Largest Builders of Heavy-Duty Air-Cooled Engines
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F&D has specialized
for more than half a
century in meeting the
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L. B. Foster Co.
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Mall Tool Co.

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Safway Steel Products, Inc.
Universal Manufacturing Corp.

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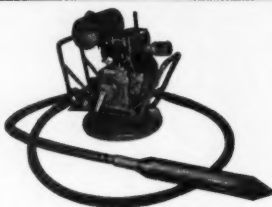
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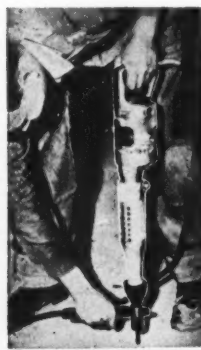
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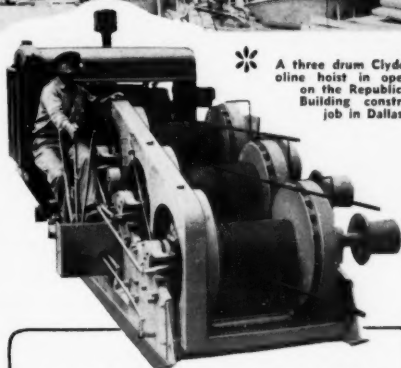


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